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SELF TAUGHT MEN.

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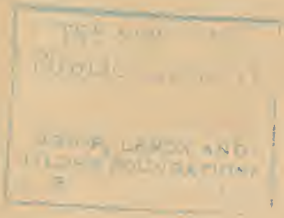
BIOGRAPHY

OF

SELF-TAUGHT MEN.



CAPTAIN JAMES COOK.

BIOGRAPHY

OF

SELF-TAUGHT MEN.

"They do most by books who could do most without them: and he that chiefly owes himself unto himself is the substantial man"

SIR THOMAS BROWNE.

T. NELSON AND SONS, LONDON: EDINBURGH: AND NEW YORK.

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TRANSFER FROM C. Q. OCT 1937

INTRODUCTORY ESSAY.

In the history of this, as of other countries, previous to the great discovery of printing, learning, and all the refined and useful arts, were exclusively confined to a distinct class, and beyond its exclusive pale, all efforts at knowledge or intellectual elevation were absolutely impossible. The gradual extension of learning by the printing press, and its perfect enfranchisement by means of our free, religious, and political institutions, have produced a total change in the means of access to knowledge. Intelligent perseverance and industry may now surmount almost every obstacle arising from humble birth and limited opportunities, and we are accordingly familiar, in the history of our most distinguished men, with instances of the greatest difficulties overcome, and the highest ranks of learning, genius, and social position, achieved by those who started surrounded by all the disadvantages of a humble sphere.

It is not surprising that, among such self-taught men, originality of thought, and indomitable energy of purpose should more frequently appear, than among those who, surrounded by all the luxuries and facilities which wealth secures, are indoctrinated from childhood into the habits and received opinions of a class, and are scarcely aware, till they enter on the great arena of life, of the precise character of their own mental faculties, or the relative

power of their will, and self-endurance. With all their disadvantages, therefore, we may justly affirm that those who by their own innate energy have to force their way upward, from lowly rank and disadvantages, to the positions for which their capacities fit them, possess some peculiar advantages over all other classes of men. They have confidence in their own power. Whatever of character they possess has been tried in the school of severe discipline. They have breasted the billows, in a great measure, alone. Others have had their doubts resolved by teachers. In the final resort, they have depended on foreign and auxiliary aid. Their own powers have been tasked for a while, but the last weight has been lifted up by the shoulders of others. A clearer eye has penetrated the dark cloud for them. It is sometimes the fact, that an individual who has been taught by others, has more confidence in the opinion of every one else, than in his own. As a direct consequence, he is wavering, timid, pliable. His character is not compacted and assimilated, but yielding and capricious. His usefulness is of course greatly diminished. But the men of whom I speak have measured their powers. They have depended very little on extraneous aid.

Another attribute of this class of individuals, is independence of purpose. They are accustomed to form opinions according to the decisions of their own judgments. They are like that description of lawyers, who have deeply studied the elementary principles of their profession, who have followed out these principles into all their ramifications, and who come to conclusions, which are, in a great measure, irrespective of particular facts—facts which may coincide, or may not, with an original principle. Such lawyers are independent, in a

great degree, of precedents, or of the opinion of courts. By severe thought and well-directed study, they have formed an independent habit of judgment. Such is the fact with those individuals who have been self-instructors. They may err in opinion, and their purposes may be formed on insufficient grounds; but they are not accustomed to bow to human authority, nor yield their free agency at the call of party or sect.

Many of this class have, moreover, an invincible perseverance. The resoluteness with which they resolve, has a counterpart in the untiring execution of their schemes. Difficulties only excite a more ardent desire to overcome them. Defeat awakens new courage. Affliction nourishes hope. Disappointment is the parent and precursor of success. A resolution so strong is sometimes formed, that it seems to enter into the nature of the soul itself. It swallows up the whole man, and produces a firmness of determination, an iron obstinacy of pursuit, which nothing but death can break down.

I have seen an individual commence a course of preparatory studies for a liberal education. Weakness of sight compelled him to suspend his labours. After a season of relaxation, he resumed his books, but the recurrence of the same disorder induced him to abandon the pursuit. He then assumed the duties of a merchant's clerk; but the same inexorable necessity followed him. He entered into the engagements of a third profession, with as little success as before. But he was not discouraged. An unconquerable determination took possession of his soul, that, come what would, he would not despair. In the merciful providence of that Being who "helps those who help themselves," he was directed to the manufacturing of a certain article which was new in that part of the

United States, and his labours were rewarded with entire success. In a few years, he became one of the most affluent individuals in his vicinity.

The following facts in relation to a gentleman, who is now a distinguished professor in one of the American colleges, will afford an excellent illustration for my purpose. The father of the individual alluded to was a poor but intelligent man, gave his children a good common education, and also to some extent the privileges of an academy, which was situated in his native town. The occupation of the son was that of husbandry, especially during the summer months, being employed by some neighbouring farmer, as his father did not own a farm. Early in life he acquired a taste for mathematics, and never afterwards did he advance so rapidly in geometry and the kindred studies, in the same number of hours' application to them, as in the evening after ten or twelve hours of hard labour in the field. Having obtained permission to see some of the astronomical instruments belonging to the academy, he became particularly attached to practical astronomy, though he could gain access only to elementary books. Having made an observation upon an eclipse of the sun, for the purpose of determining the longitude of the place, he commenced the work of resolving the problem with only the general directions and tables in the common books of navigation; and although it cost him several months of severe study, he succeeded in obtaining a correct result, except the errors of the lunar tables. He did not engage in the study of Latin and Greek, until after he had been interested several years in mathematics, and then, mainly because he found that he could not otherwise become a teacher. While occupied in these studies, he supported himself in part by

occasionally surveying land, and in part by undertaking the business of a carpenter, having discovered that this art depended on a few simple mathematical principles easily applied. The object which he now had in view, was to prepare himself to enter Harvard college two or three years in advance. He was for the most part his own instructor. The minister of the parish rendered him some assistance; but the whole amount of his recitations in Latin, Greek, Hebrew, French, philosophy, chemistry, and natural history, during the whole course of his life thus far, has not been greater than the recitations in college for six months. Having looked forward with much pleasure to the privileges of a college, and having been nearly prepared to enter a junior class, a sudden termination was put to his literary efforts, by the failure of his eyes, in consequence of applying too closely to the study of the Greek language, during a feeble state of health. For the following year, he was compelled to abandon reading and study almost wholly; and from that time to the present,—a period of sixteen years,—he has rarely been able to read steadily, for one hour, without experiencing much and often severe pain in his eyes, sometimes threatening apoplexy. This affliction, though highly beneficial in its moral influence, was apparently fatal to all his literary plans; yet he could not quite abandon them. In order to obtain a subsistence, he soon after accepted the office of a deputy or assistant to the sheriff of the county. Feeling confident that he must entirely renounce the idea of obtaining a subsistence by literary efforts, and seeing nothing before him but a life of servile labour, he was induced to write and publish a dramatic performance of considerable length, with the hope that it would excite some interest in his

favour, wherever his lot might fall. The composition, though bearing the marks of inexperience, contains some passages of true poetic feeling, expressed in powerful language. Soon after this event, he was very unexpectedly invited to teach the academy in his native village. To acquit himself in this new sphere of duty, he made great efforts. He now gave particular attention to classical literature. Finding that his health had suffered severely from previous efforts, and from the consequences of the dreadful despondency through which he had passed, he was compelled to abandon mathematical and astronomical studies, though it was a most painful sacrifice. Providence, however, furnished a delightful substitute. Natural history then first attracted his attention, and he soon found that he could pursue this study, without injury to his eyes, and with benefit to his health, in the intervals of severer engagements. These pursuits introduced him to the acquaintance of a number of distinguished gentlemen, in various parts of the country, who rendered him very valuable assistance. About this time, the honorary degree of Master of Arts was conferred on him by Yale college. The only pecuniary aid which he ever received, during the course of his education, was about three pounds. Notwithstanding, when he entered on his professional duties, he had obtained a respectable library, and was free from debt. He is now in a station of great usefulness, and has accomplished several undertakings, which have conferred lasting benefits on the country. In the two words, INDUSTRY and PERSEVERANCE, is contained the secret of these results. With whatever original powers the Creator may have endowed him, they would have availed him nothing, without an unbending resolution, and severe and unremitted

application. His history affords a remarkable instance of the energy of a self-taught man. Those events, in the providence of God, which would have presented insurmountable obstacles to other individuals, were only an excitement to him to urge, with fresh impulse, his onward course.

Another characteristic of self-taught men, is, that they commonly devote themselves to some important practical object. They do not waste their power in pursuing trifles. They do not generally engage in the departments of criticism and metaphysics, which are rewarded with little practical result. It is those who have ample means of subsistence and support, who are beguiled into merely speculative regions, or who devote themselves to undertakings of moderate or of doubtful utility. The case is different with those who are dependent on their own efforts for everything. The first direction of their minds is not so much to the sciences as to the arts. Carpentry in various forms, surveying of land, the manufacture of machinery, the construction of hydraulic engines, originally offering themselves to their notice, gave a shape to their whole subsequent life. It is to be attributed to this fact, doubtless, that self-taught men are distinguished for *invention* in the arts. Their necessities have given a readiness to their minds, enabling them to seize on those combinations of thought, from which discoveries of great importance have sometimes followed. They have also that power of patient application, which is alike important to discovery. Causes, however, exist, in this description of men, unfavourable to the development of new truths in the abstract sciences.

Self-taught men have also the faculty of clearly communicating their knowledge to others. In this respect,

they make excellent teachers. They have worked their own way up the steeps of knowledge, and they can point out the path in which they came. Their attention was not absorbed by the movements of their guide, for they had none. The various objects which they met, they clearly marked and defined. Whatever were the general principles which they adopted, they were not taken upon trust, but were well considered. These individuals may not be able to explain their progress logically, or scientifically, but they can do it intelligently, and to good purpose. They have, also, in a striking degree, the ability to employ familiar illustrations. For the sake of throwing light upon their course, they have not searched for the images of poetry, nor listened to the personifications of the orator; they have collected the apposite and graphic illustrations and facts, which common people can apprehend and relish, and which are gathered from the rocks and the fields, and from all the incidents of ordinary life. Arthur Young, the self taught English agriculturist, was distinguished as an instructer, insomuch that La Fayette, and the Russian prince Galitzin, and the Russian emperor himself, intrusted lads to his guidance and care. No treatise on astronomy has ever been so popular, and deservedly too, among all descriptions of learners, as that of James Ferguson, who discovered some of the principles of mechanics before he knew that any treatises had been written on the subject. Sir Humphrey Davy was, perhaps, the most popular lecturer who ever addressed a British audience. This was owing not more to the enthusiasm of his character, and his perfect knowledge of his subject, than to the clearness of his expositions, and the transparency and beauty of his illustrations.

There are notwithstanding these various excellences, several acknowledged deficiencies of character. There are blemishes, both of an intellectual and moral kind, which are almost inseparable from a plan of self-education, and which are worthy of distinct consideration.

One of the most manifest defects is, want of comprehensiveness of mind. The special advantage of a teacher is, to point out the connections among the different arts and sciences, their relative importance, the natural order of studying them, and the evils of a disproportionate attention to any one of them. The general directions of a judicious teacher are invaluable. They are like a drawing of the heavens to direct the course of the youthful observer among the millions of stars. But a student, without the instructions of an experienced guide, will be liable to seize at once upon the *parts* of a subject, or upon the middle of a treatise, without ever having surveyed his ground, or marked its general bearings. He will thus expend his labour at unimportant points, or in a disproportionate degree. There will be little symmetry and scientific method in his studies. His labours will resemble those of a mechanic, who should place a well-finished door or window in the side of an old and dilapidated dwelling. He has an accurate acquaintance with one branch of a subject, while all around it is in disorder and deformity. And here it is not to be supposed that he will gain a more thorough knowledge of a specific topic, in consequence of giving an exclusive attention to it; and that this will atone for the loss of a general acquaintance with the subject. The study of Webber's trigonometry will furnish as much discipline for the mind, if the student, before he commences his investigation, knows the general relations of the mathematical

sciences, as if he had no such general knowledge. A greater amount of mental discipline can be acquired, by studying the sciences in their natural, scientific order, than by attending to them exclusively and at random. A self-taught man is frequently attached, with a kind of favouritism, to a particular study. It absorbs his whole attention, and all other arts or sciences are proportionably undervalued and slighted. The distinguished painter, Hogarth, affected to despise literature, and indeed every species of mental cultivation, except the knowledge of the art of painting; and he even professed himself to have little or no acquaintance with anything else. The celebrated, self-taught anatomist, Dr. John Hunter, was almost entirely ignorant of all learning, even with that connected with his own profession. It has been asserted, that it not unfrequently happened, that upon communicating a supposed discovery of his own to some one of his own more erudite friends, he had the mortification to learn that the same thing had already been discovered by some other well-known anatomist. Michael Angelo could scarcely spell his name correctly. Benjamin West, the president of the Royal Academy for almost thirty years, never attained to a style of ordinary correctness in his orthography. The disadvantages of the want of an early education, can never, indeed, be entirely overcome. There will always be lingering traces of the deficiency. It is like the acquisition of the pronunciation of a foreign language at a late period in life. The nice peculiarities and shades of sound, cannot, by any effort, be acquired.

Self-taught men are specially liable to an exclusive attachment to pursuits which are obviously and immediately practical. There seems to be a general impression,

that poetry, and the kindred branches of literature, furnish little else but amusement, and if read at all, can afford materials for recreation only in the intervals of imperious duty. The tendency to judge in this manner can be accounted for, without any difficulty, from the circumstances in which self-educated men are placed, but the effects are very pernicious. Poetry, in its best sense, is altogether a practical study. Its influence upon the whole mind of a reader, is, in the highest degree, favourable. As history is said to be philosophy teaching by example, so poetry is philosophy teaching by music. It is good sense, pouring itself out in sweet sounds. It is powerful thought, uttering itself in the voices of angels. A true poet is a philosopher. Milton, and Wordsworth, and Coleridge, understand the phenomena of the human mind, as well as Malebranche, or Reid, or Brown. They have the same capacities of wide generalization, and accurate analysis, and faithful exposition. To read such poets, is as directly conducive to usefulness, as it is to read the ablest metaphysical treatise. We cannot avoid regretting that a man like Dr. Franklin, was not conversant with the best poets. It would have been no injury to his usefulness as a profound observer of human manners. Common sense and the loftiest imagination are perfectly coincident. The same man may condense his ideas into epigrams and proverbs, or pour them out in strains of the most vigorous and harmonious versification. It is recorded of him who "spake three thousand proverbs, that his *songs* were a thousand and five." He that was wiser than all the children of men, who so condensed and embodied his thoughts as to make nearly every word instinct with sentiment, could delightfully sing, "the winter is past, the rain is over and gone, the

flowers appear on the earth, the time of the singing of birds is come, and the voice of the turtle is heard in the land." If Benjamin West had read Chaucer, and Spenser, and Milton, it would not have subtracted in the least from his enthusiasm for his favourite art, while, in a thousand ways, it would have aided his power of conceiving and of delineating on the canvass, the varieties of human character. It would also have relieved the president of the Royal Academy, of the charge of being an illiterate man. John Opie, Professor Heyne, and Sir Humphrey Davy, showed their good sense in nothing more than by an earnest attention to various branches of literature and science. It is not pretended that every man ought to attempt to become a universal scholar; but that the highest excellence in any one pursuit, is inconsistent with entire ignorance of science and literature generally. Self educated men are peculiarly exposed to danger from this quarter; and instead of banishing works of taste and imagination from the farm-house, and the lyceum, and the manual-labour school, they are the very productions which ought to meet with a welcome reception. It has been said, that very few, if any, discoveries in the abstract sciences, have ever been made by men who have instructed themselves; that the general advancement of knowledge is almost entirely to be ascribed to men who have received a regular education. The labours of Franklin, Rittenhouse, and others, may furnish some exceptions to this remark. Nevertheless, it is generally true, that prior to a particular discovery, an individual must take a wide, general survey of the fields of knowledge, else he may fondly imagine that he has elicited some new truth, which may at length appear to have been long before discovered and classified.

Original conception and inventive genius, are in perfect harmony with extensive acquisitions. He, who would advance in any department of knowledge, must know what others have done before him. Instead of decrying the models of taste and genius of other ages and countries, it is the wisdom of every man to study them patiently and thoroughly. This is not a degrading subjection to other minds, which will cramp or annihilate genius. If ever there was an original author, it was John Milton—he who "chose early and began late." But who does not know that Paradise Lost is the spoils of all times and of all countries? If ever there was a universal plunderer, if ever there was a boundless plagiary, it was this same John Milton. He searched the Jewish records, and the Christian economy. He opened the Talmud, and he perused the Koran. He reveled in the fields of Achaia, and on the hill-sides of Judea. He listened to the sweet music under Italian skies, and to the awful prophecies of the Druids. He drank alike of the Eurotas, and of that "stream which flows fast by the oracle of God."

Another evil to which men of this class are liable is, what may be expressed by the term *rigidness* of character. They sometimes acquire a fierceness of independence, an extreme hardihood of spirit, which nearly destroys their social sympathies, and greatly subtracts from their usefulness. They were themselves nursed in winds and storms. They trampled the most formidable difficulties under their feet, and smote into the dust every enemy which rose up against them. Some of them seemed to triumph over physical impossibilities, and to make the loss of one faculty or sense, the stimulus to push their remaining powers to the ultimate limit of per-

fection. Hence they infer that this same fortitude and fearlessness belongs, or should belong, to every other human being. Finding a deficiency of these stern qualities, they consider it as an offence almost unpardonable. They do not have compassion on the erring and ignorant. They do not make sufficient allowance for human infirmity. They do not recollect, perhaps, those favourable conjunctures in the providence of God, of which they took advantage, and which may not fall to the lot of others. Those, who have amassed large estates, by vigorous personal effort, are sometimes disposed to carry habits of economy to absolute avarice. Misers are frequently found among this class of men. What is won with hardship is held with a tenacious grasp. Fortunes thus acquired will not be dissipated, at least till the second generation; a generation which knows not the habits of their fathers. An individual, who has become affluent by his own exertions, may acquire habits of genuine philanthropy, and in that case, is entitled to greater commendation, in consequence of the difficulties which he has overcome; still there is ground to apprehend that his charities will be confined to one or two favourite channels, and that, in the multiplicity of the smaller incidents and occasions of life, he will be far from exhibiting genuine greatness of soul, or real philanthropy of feeling. From the very nature of the case, he will be disposed to ascribe an undue importance to the various contrivances and systems, which are intended to enable an individual, without pecuniary resources, to rise, by personal exertion, to spheres of usefulness and honour.

Intimately connected with the deficiency of character just described, is the habit of over-estimating personal

or other attainments. Self-confidence is frequently carried too far. A great change in external circumstances, is always attended with imminent danger in the subject of it. Elevate a servant to a throne, impart at once large literary treasures to an ignorant and obscure individual, fill the house of the poor man with wealth; and you take a most effectual way to imbue him with the spirit of arrogance and vanity. Julius Cæsar Scaliger, the great critic, was a self-taught man, but guilty of the most excessive affectation and pride. He was contented to be called Bordoni, and the son of a miniature painter, till he was nearly fifty years old. He then composed an elaborate memoir of his own life, in which he pretended that he was the last surviving descendant of a princely house of Verona. Bandinelli, an Italian sculptor, the son of a goldsmith, and the grandson of a common coalman, having, in the course of his life, acquired great wealth, and having been created a knight by Charles V., is said to have repeatedly changed his name, in order to hide his parentage; and to have fixed at last upon that by which he is generally known, in order that he might appear to have sprung from a noble family. A similar anxiety to secure to himself the reputation of a name, was manifested by the great Spanish dramatist, Lopez de Vega.

One of the especial benefits of a regular education, is to wear away or cut off these excrescences of character. It is exceedingly difficult for an individual to retain in quiet possession, within the walls of a college, a great amount of self-conceit or vanity. He comes into contact with rough corners. He is speedily in collision with flint. Powerful minds will meet in fierce competition, and sad will be his lot who brings into debate an unusual share of self-importance. College is a great leveller.

Hence it is, that in the last sessions of a collegiate course, the real advance can be measured by contrasting the accompanying modesty and docility, with the opposite qualities, which are frequently visible at the earlier periods. At college, an individual will be compelled to learn what his real talents and attainments are. There is scarcely the possibility of deceiving several keen-eyed equals. There is very rarely an undue degree of sympathy or compassion in a classmate. But in the case of an individual who has educated himself, there is no class of men anywhere in his neighbourhood, with which he can compare himself. He grows up alone. An innate vigour is the sap which nourishes him. All the individuals of his acquaintance are, perhaps, clearly his inferiors. At the same time, his injudicious relatives may administer large draughts of flattery to his lips, till he becomes exceedingly wise in his own sight, and the wonder of the age which has produced him. As correctives of this very obvious evil, our public institutions are admirably adapted, and are, in fact, indispensable.

To the numerous class of young men who are mainly dependent on their own resources for knowledge, or respectability, one of the most important counsels of wisdom which can be addressed, is, STUDY YOUR OWN CHARACTER AND PROSPECTS. If you are just emerging from obscurity, and breathing the fresh air of an emancipated mind, and thirsting for improvement, and occasionally catching some gleams of light from that undiscovered land of promise which lies in the distant horizon; let not your fancy, nor your excited feelings, lead you captive. Be calm and considerate. A wrong step now may blast your hopes for ever. An imperfect estimate of the defi-

ciencies of your character, may impede your course through your whole subsequent life. Be willing to know all the wrong habits which you have cherished, and all the weaknesses of your mind. If possible, find an experienced friend, who has an enlarged mind and a liberal heart, and who has no exclusive and favourite study or system of his own. The counsels of such a guide will be inestimable. Next to the blessing of the Almighty, they will ensure success. When all this is done, form a calm and deliberate determination that you will take that path, come what may, which will secure your highest happiness and usefulness. Nourish that inflexible, that iron determination in your heart, without which nothing will be achieved.

In the second place, you will have occasion to guard against underrating knowledge. Learning, if it be thoroughly apprehended and digested, cannot be too highly esteemed. Mere acquisition of facts, indeed, without analysis and reflection, is positively injurious to the mind. Reading, unattended with contemplation, will produce habits of affectation and pedantry. Nevertheless, those, who are most exposed in this respect, are men of literary leisure, or scholars by profession. You are liable to fall into the opposite error. Compelled by your circumstances to think, relying on the native resources of your own mind, you will learn to look disparagingly on the scholar of comprehensive and ample attainment. But extensive acquisitions are perfectly consistent with profound original investigation. Reading the thoughts of others, will often awaken interesting and valuable trains of reflection. An active mind will assimilate, or correct, or transform the views of the author whom he is reading. The very ability to peruse certain

books, implies that the reader himself has powers of reflection and arrangement.

Again, want of immediate success at the commencement of your studies, will, without great care, weaken your resolution, and interrupt your efforts. You have, perhaps, come from the toils of a shop or farm, to the hall of science, and to the pursuits of the scholar. Habits of close investigation cannot be acquired in a day. A wandering mind cannot be fixed without painful effort. Associations acquired in pursuits alien from science and taste, cannot be changed at the mere bidding of the will. Those lands of beauty and joy, which shall at length open to your view, are at the commencement of your course shrouded in impenetrable clouds. Algebra and Plato are invested with their full charms only to the practised eye and to the disciplined intellect. You need to fortify your mind with the strong convictions of duty. Hearkening invariably to the decisions of an enlightened conscience, and the dictates of sound reason, you will at length find that the path of enlarged thought, and of cultivated feeling, and of refined taste, is the path of pleasure.

In regard to such individuals, in the class of self-taught men, who devote their attention to any of the mechanic arts, or to either of the departments in common life and business, though their particular pursuit is to engross their chief attention, yet it is of great importance that they become thoroughly acquainted with the principles of their trade, and with the reasons of the rules according to which they daily practise. They should throw as much mind as possible into all which they undertake. The perfection of machinery, and the excellence of soils, are not the only objects of inquiry. The thorough ac-

quaintance with the philosophy of the art, the means of its advancement, and the ways in which it can confer the greatest possible benefits on mankind—these are the topics which will command the attention of an individual, in proportion as his views are expanded, and his feelings benevolent. No inconsiderable number of self-taught men have, in this way, conferred invaluable benefits upon mankind. Watt, Fulton, Whitney, Franklin and Davy, will be dear and cherished names, ages hence.

Another class of individuals to whom I have alluded, are pursuing a partial course of self-education, at lyceums. They can devote to literary and scientific pursuits only a limited portion of time, perhaps simply the evenings of the winter months. By associating all the young men and others in the town, and statedly meeting for the consideration and discussion of important subjects, very great benefits may be derived, provided the association can be made to *exist* for a sufficient length of time. It needs a principle of vitality. To secure any great degree of usefulness, permanence must be given to it. It is a voluntary association, in the strictest sense of the term. But no object of much importance can be secured, without the feeling of responsibleness, or accountability, in some of the individuals concerned. A few lectures on the common and familiar topics of science, or on matters of local history, will be of little service. There must be a plan to secure a permanent and enduring interest. As many individuals as possible must be brought into fervent co-operation. New arrangements of subjects must be occasionally adopted. Foreign aid, whenever practicable, must be secured. A well chosen and constantly accumulating library must be obtained. And what is, perhaps, of greater importance than any-

thing else, *all the members must have something to do.* Personal participation is the great secret of exciting and maintaining a permanent interest in an undertaking.

To the individual who will even cursorily look at the state of this country, or the history of individual men, in comparison with the history or condition of any other country, it must appear strikingly obvious, that never were circumstances more favourable than among us for the development and employment of mind. In this country, character and influence can be gained by vigorous individual effort. No position in society is beyond the reach of genius, when allied to indomitable perseverance. Free and fresh as the air which he breathes, each individual may start in the career of improvement. Nearly all the circumstances which are calculated to depress and dishearten, arise from extreme poverty, or else from personal considerations. But nothing short of absolute impossibility, in the providence of God, ought to deter any one from engaging in the pursuit of knowledge. Obstacles of fearful magnitude, and of almost every description, have been overcome in innumerable instances.

Have you been deprived of one of your senses? Not a few have vanquished this impediment. The instance of Mr. Nelson, a learned classical professor in Rutgers College, New Jersey, as detailed by Professor M'Vicar, in his Life of Griffin, is admirably in point. Total blindness, after a gradual advance, came upon him about his twentieth year, when terminating his collegiate course. It found him poor, and left him to all appearance both penniless and wretched, with two sisters to maintain, without money, without friends, without a profession. Under such an accumulation of griefs, most minds would have sunk; but with him it was otherwise. At all times

proud and resolute, his spirit rose at once into what might be called a fierceness of independence. He resolved within himself to be indebted for support to no hand but his own. His classical education, which, from his feeble vision, had been necessarily imperfect, he now determined to complete, and immediately entered upon the apparently hopeless task, with a view to fit himself as a teacher of youth. He instructed his sisters in the pronunciation of Greek and Latin, and employed one or other constantly in the task of reading aloud to him the classics usually taught in the schools. A naturally faithful memory, spurred on by such strong excitement, performed its oft-repeated miracles; and in a space of time incredibly short, he became master of their contents, even to the minutest points of critical reading. On a certain occasion, a dispute having arisen between Mr. Nelson and the classical professor of the college, as to the construction of a passage in Virgil, from which his students were reading, the professor appealed to the circumstance of a comma in the sentence, as conclusive of the question. "True," said Mr. Nelson, colouring with strong emotion, "but permit me to observe," added he, turning his sightless eyeballs towards the book which he held in his hand, "that in my *Heyne* edition it is a colon, and not a comma." He soon established a school for classical education. The boldness and novelty of the attempt attracted general attention; the lofty confidence he displayed in himself excited respect; and soon his untiring assiduity, his real knowledge, and a burning zeal, which, knowing no bounds in his devotion to his scholars, awakened somewhat of a corresponding spirit in their minds, completed the conquest. His reputation spread daily, scholars flocked to him in crowds, and in a few years he

found himself in the enjoyment of an income superior to that of any college patronage in the United States. Fernandez Navarete, a distinguished Spanish painter, was seized with an illness, when only two years old, which left him deaf and dumb for life. Yet, in this state, he displayed, from his infancy, the strongest passion for drawing, covering the walls of the apartments with pictures of all sorts of objects, performed with charcoal; and having afterwards studied under Titian, he became eventually one of the greatest artists of his age. He could both read and write, and even possessed considerable learning. Nicholas Saunderson, one of the illustrious men who has filled the chair of Laucasian professor of mathematics at Cambridge, England, when only two years old, was deprived by small-pox, not only of his sight but of his eyes themselves, which were destroyed by abscess. He was sent to the school at Penniston, early in life, and soon distinguished himself by his proficiency in Greek and Latin. He acquired so great a familiarity with the Greek language, as to be in the habit of having the works written in it read to him, and following the meaning of the author as if the composition had been in English; while he showed his perfect mastery over the Latin, on many occasions, in the course of his life, both by dictating and speaking it with the utmost fluency and command of expression. In 1728, he was created Doctor of Laws, on a visit of George II. to the university of Cambridge, on which occasion he delivered a Latin oration of distinguished eloquence. He published an able and well-known treatise on algebra, a work on fluxions, and a Latin commentary on Sir Isaac Newton's Principia. His senses of hearing and touch were carried to almost incredible perfection. The cele-

brated mathematician, Euler, was struck with blindness in his fifty-ninth year, his sight having fallen a sacrifice to his indefatigable application. He had literally written and calculated himself blind. Yet, after this calamity, he continued to calculate and to dictate books, at least, if not to write them, as actively as ever. His Elements of Algebra, a work which has been translated into every language of Europe, was dictated by him when blind, to an amanuensis. He published twenty-nine volumes quarto, in the Latin language alone. The mere catalogue of his published works extends to fifty printed pages. At his death, he left about a hundred memoirs ready for the press.

Have you wasted the early part of life, and are you now compelled to commence, if at all, a course of self-education in the later period of youth, or in middle age? Let not this circumstance, in the least degree, weaken your resolution. Numerous are the instances in which this difficulty has been overcome. Cato, the celebrated Roman censor, showed his force of character very strikingly, by learning the Greek language in his old age. At that time, the study of this tongue was very rare at Rome; and the circumstance renders the determination of Cato, and his success, the more remarkable. It was the first foreign language, also, which he had acquired. Alfred the Great, of England, had reached his twelfth year before he had even learned his alphabet. An interesting anecdote is told of the occasion on which he was first prompted to apply himself to books. His mother, it seems, had shown him and his brothers a small volume, illuminated or adorned in different places with coloured letters, and such other embellishments as was then the fashion. Seeing it excite the admiration of the children,

she promised that she would give it to him who would first learn to read it. Alfred, though the youngest, was the only one who had the spirit to attempt to gain the prize on such conditions, at least it was he who actually won it; for he immediately, as we are told, went and procured a teacher for himself, and in a very short time was able to claim the promised reward. When he came to the throne, notwithstanding all his public duties and cares, and a tormenting disease, which scarcely ever left him a moment of rest, it was his custom, day and night, to employ his whole leisure time, either in reading books himself, or in hearing them read by others. He, however, reached his thirty-ninth year before he began to attempt translating anything from the Latin tongue.

The French dramatist, Molière, could only read and write very indifferently when he was fourteen years of age. Dr. Carter, the father of the celebrated Miss Carter, had been originally intended for a grazier, and did not begin his studies till the age of nineteen or twenty. He eventually, however, became a distinguished scholar; and gave his daughters a learned education. Joannes Pierius Valerianus was fifteen years old before he began to learn to read; his parents, indeed, having been so poor, that he was obliged to commence life as a domestic servant. He became one of the most elegant scholars of his time. Van den Vondel, an honoured name in Dutch poetry, and the author of works which fill nine quarto volumes, did not commence learning Latin till his twenty-sixth year, and Greek not till some years afterwards. Like many others of the literati of Holland, he began life as a commercial man, and originally kept a hosier's shop at Amsterdam; but he gave up the business to his wife, when he commenced his career as an author. He died in ex-

treme old age, after having occupied, during a great part of his life, the very highest place in the literature of his country.

John Ogilby, the well known translator of Homer, was originally a dancing-master. He had apprenticed himself to that profession, on finding himself reduced to depend on his own resources, in consequence of the imprisonment of his father for debt. Having been prospered in this pursuit, he was very soon able to release his father, much to his credit, with the first money which he procured. When he had fairly established himself in Dublin, the rebellion of 1641 commenced, and not only swept away all his little property, but repeatedly put even his life in jeopardy. He at last found his way back to London, in a state of complete destitution; notwithstanding he had never received any regular education, he had before this made a few attempts at verse-making, and in his extremity he bethought him of turning his talent in this way to some account. He immediately commenced his studies, which he was enabled to pursue chiefly through the liberal assistance of some members of the University of Cambridge; and although then considerably above forty years of age, he made such progress in Latin, that he was soon considered able to undertake a poetical translation of Virgil. This work made its appearance in the year 1650. A second edition of it was printed a few years afterwards, with great pomp of typography and embellishments. Such was its success, that the industrious translator actually proceeded, although now in his fifty-fourth year, to commence the study of Greek, in order that he might match his version of the Æneid by others of the Iliad and Odyssey. In due time both appeared. In 1666, he was left, by the great fire of

London, once more entirely destitute. With unconquerable courage and perseverence, however, he rebuilt his house and re-established his printing-press. He was now appointed cosmographer and geographical printer to Charles II. He died at the age of seventy-six years.

In the United States, there have been numerous instances of great success in professional pursuits, which the individuals in question did not assume till a very late period in life. An eminent clergyman in a New England city, toiled in one of the most laborious mechanical professions, till he was far in advance of that age when study is generally commenced. He then pursued a regular academical and theological education, almost wholly dependent on his own resources. A gentleman, who is now at the head of one of the most flourishing of the American colleges, was employed on a farm as a hired labourer, till he was beyond that period when most students have completed their collegiate education. The sudden rise of the waters of a neighbouring river, which prevented him from proceeding to commence his labours on another farm, was the event, in the providence of God, which determined him to begin his preparation for college. A number of additional striking instances will be found in the course of this volume. A great amount of mind, and of usefulness, is undoubtedly wasted, by the belief that little can be accomplished, if an individual has suffered the first thirty years of his life to pass without improvement. Is it not an erroneous idea, that a man has reached the meridian of his usefulness, and the maturity of his powers, at the age of thirty-five or forty years? What necessity exists for prescribing a limit to the onward progress of the mind? Why set up a bound at a particular time of life more than at another time? Is there

not a large number of men, in this country, whose history would prove the contrary doctrine,—who have actually exhibited more vigour of intellect at fifty years of age, than at forty? There are instances among the venerable dead, where the imagination even gathered fresh power to the close of a long life. That a majority of facts show that maturity of intellect is attained at the age of thirty-five years, is unquestionably owing, in some degree at least, to the influence of the opinion itself. It has operated as a discouragement to effort.

Once more—are you called to struggle with the difficulties arising from obscure parentage and depressing poverty? Here multitudes have obtained most honourable triumphs, and have apparently risen in the scale of honour and usefulness in proportion to the depth of the penury or degradation of their origin. Laplace, a celebrated French mathematician and astronomer, and whom Dr. Brewster supposes posterity will rank next after Sir Isaac Newton, was the son of a farmer in Normandy. The American translator of his great work, the *Mécanique Céleste*, and who has added a commentary, in which the amount of matter is much greater than in the original work, while the calculations are so happily elucidated, that a student moderately versed in mathematics, may follow the great astronomer with pleasure to his beautiful results—is entirely a self-taught man. A distinguished benefactor of one of our principal theological seminaries, has risen from extreme poverty to the possession of great wealth and respectability. The same was the fact also with a former lieutenant-governor of Massachusetts, who, in the days of his highest prosperity, had none of that pride of fortune and haughtiness of demeanour, which are sometimes consequent upon the

unexpected acquisition of a large estate. Several of the most useful and respected citizens of the capital of New England, in the early part of their lives, were entirely destitute of all resources, except the strength of their own unconquerable resolution, and the favour of Providence. The celebrated German metaphysical philosopher, Kant, was the son of a harness maker, who lived in the suburbs of his native city, Königsberg. He had hardly arrived at the age of manhood before he lost both his parents, who had never been able to afford him much pecuniary assistance. His own industry and economy, together with some assistance which he received from his relatives, enabled him to continue his studies. His application was uncommonly great, and the results of it, numerous and extraordinary. He published a work on the Universal Natural History and Theory of the Heavens, or an Essay on the Constitution and Mechanical System of the whole Globe, according to the Newtonian System. In this treatise he anticipated several of the discoveries of the astronomer Herschel. His principal metaphysical work, the "Critique of Pure Reason," produced an astonishing sensation through all Germany. He was appointed, in 1778, professor of logic and metaphysics, in the university of Königsberg. James Logan, the friend of William Penn, and for some time chief justice and governor of Pennsylvania, was early in life apprenticed to a linen-draper. Previously to his thirteenth year, he had studied the Latin, Greek and Hebrew languages. In the sixteenth year of his age, having happily met with a small book on mathematics, he made himself master of it without any manner of instruction. Having also further improved himself in Greek and Hebrew, he acquired the French, Italian and

Spanish languages. Like William Penn, he was a warm and efficient friend of the Indians. He was a man of uncommon wisdom, moderation, prudence, of unblemished morals, and inflexible integrity. Lomonosoff, the father of Russian literature, was descended from a poor family in the government of Archangel. His father was a fisherman, whom he assisted in his labours for the support of his family. In winter, a clergyman taught him to read. A poetical spirit and a love of knowledge were awakened in the boy, by the singing of the psalms at church, and the reading of the Bible. Without having received any instruction, he conceived the plan of celebrating the wonders of creation, and the great deeds of Peter I., in songs similar to those of David. He died in 1765. The Russian academy have published his works in six volumes quarto. He wrote several treatises on grammar, history, mineralogy and chemistry, besides some of the best poetry in the language. Winckelman, one of the most distinguished writers on classical antiquitie and the fine arts, which modern times have produced, was the son of a shoemaker. His father, after vainly endeavouring, for some time, at the expense of many sacrifices, to give him a learned education, was at last obliged, from age and ill health, to retire to an hospital, where he was, in his turn, supported for several years in part by the labours of his son, who, aided by the kindness of the professors, continued to keep himself at college, chiefly by teaching some of his younger and less advanced fellow students. Bartholomew Arnigio, an Italian poet, of considerable eminence, who lived in the sixteenth century, followed his father's trade of a blacksmith till he was eighteen years old, when he began, of his own accord, to apply to his studies; and by availing himself of the aid sometimes of

one friend and sometimes of another, prepared himself at last for entering the university of Padua. Examples of this description it is unnecessary to multiply. The records of all the learned professions will show many instances admirably in point. Every legislative hall would furnish marked and illustrious specimens. The last degree of penury, the most abject occupations of life, have not presented an insurmountable obstacle to improvement. The aspiring mind will pass over or break down every impediment. Prisons cannot chain it. Dungeons cannot immure it. Racking pains cannot palsy its energy. Opposition will only nurture its powers. The Pilgrim's Progress was written by a tinker in prison; the Saint's Rest, on a bed of excruciating pain; the Apology for the Freedom of the Press, and the Sermons upon Modern Infidelity, in the intervals of one of the fiercest diseases which ever preys upon man. Pascal, that sublime and universal genius, equally at home in the most accurate analysis and in the widest generalization, was visited with an inexorable malady during the greater part of his life. Dr. Watts, the sweet psalmist of ages yet to come, was as weak in body, as he was clear and powerful in intellect. On some occasions, it would seem, that the mind is conscious of its own independence, and asserts its distinct and unfettered existence, amidst the severest ills which can befall its frail and dying companion.

We live in an era of progress and change, when there is a peculiar call for the devotion of the highest powers of genius and intellect to the direction of the future.

It is worthy of deep and careful consideration, whether our country does not demand a new order of intellect, and whether the class, whose character I have been considering, cannot furnish a vast amount of materials. It

is not piety alone which is needed, nor strength of body, nor vigour of mind, nor firmness of character, nor purity of taste; but all these united. Ought not this subject to awaken the attention of our most philanthropic and gifted minds? Ought not social libraries to be collected with this main purpose—to furnish stimulant to call forth all possible native talents and hidden energies? Ought not the systems of discipline and instruction at all our colleges, to be framed, and to be administered, with a distinct and declared regard to the benefits which self-taught genius, with the superadded effects of thorough instruction, can confer upon the millions of our country? Every parent, and every instructor, should employ special means to bring his children or his pupils into such circumstances, and place in their way such books and other means, as will develope the original tendencies of their minds, and lead them into the path of high attainment and usefulness. Every educated man is under great responsibilities to bring into the light and to cherish all the talent which may come under his influence. Vast treasures of thought, of noble feeling, of pure and generous aspirations, and of moral and religious worth, exist unknown—are never called forth to adorn human nature, and to bless mankind. To provide intellectual and moral sustenance for our population, requires an enlargement of thought and an expansiveness of philanthropy, such as has never yet been exhibited. This nation needs what was conferred on Solomon, "wisdom and understanding exceeding much, and largeness of heart, even as the sand that is on the sea-shore." How pitiable and how deplorable are many of the contests between political parties, benevolent societies, and religious denominations. While thus contending with one another, we are

losing the favourable moment for effort; and we are preparing to have heaped upon our heads the curses of an unnumbered posterity. To live simply as insulated beings, is a great error, and a serious injustice to posterity. We must take our stand on fundamental principles, and set those great wheels in motion, which, in their revolution, are to spread light, and life, and joy through the land. While we place our whole dependence on the goodness and the grace of the Ruler of the universe, we must act as those who recollect their origin, and are conscious of the high destiny to which Providence calls them.

Let us come up to our great and most interesting work. Let us lift our eyes on the fields, boundless in extent, and white already to the harvest. Here in this age and country let the tide of ignorance be stayed; let human nature assume its renovated form; let the flame of human intellect rise, and sweetly mingle with the source of all mental light and beauty; purified by the highest influences of true Christian faith and love, let our character and labours be such, that we shall send forward to the most distant posterity, a strong and steady light. We must take no middle ground. We must bring to the great work of illuminating this country and of blessing mankind, every capability of mind and of heart, which we posesses—every possibility of the power which God has given to us.

BIOGRAPHY

OF

SELF-TAUGHT MEN.

JAMES COOK.

Every science is closely connected with many other sciences, and an advance in one is sure to be followed by an advance in others. Of this the recent improvements in the science of geography are a memorable illustration. It is an interesting fact in the history of science, that we are indebted for an accurate knowledge of our earth to a previous knowledge of the heavens. The wandering stars have taught us where stand fixed the everlasting hills. It would seem that mere curiosity would have long since prompted men to enlarge to the utmost the boundaries of geographical knowledge, and to have at least determined the situation of places with considerable accuracy. But curiosity, although it has accomplished much, has had many things to contend with. Extensive explorations are attended with great cost. Men went with timidity —the timidity of ignorance and superstition—into the

regions that lay much beyond the bounds of civilization; where, besides, there was little to tempt them, and much that was really formidable to deter. The condition and character of governments rendered them indifferent to the state of geographical knowledge, or incapable of extending it; and, above all, want of skill in navigation hindered maritime discoveries; and the absence of proper instruments and of general scientific attainments prevented an accurate determination of what was known. The early travellers were for the most part merchants, and it may be said, generally, that geography was but a very humble attendant upon commerce.

The Cape of Good Hope was not discovered until 1486. The celebrated voyage to India by Vasco de Gama, the great Portuguese navigator, did not take place till 1497. In the mean time, in 1492, Columbus had found another world. Knowledge advanced with rapid strides through new fields, but yet was neglectful of much that lay scattered about the old. It became general, but had not become accurate and severe.

We should think that few things in geography would be determined sooner than the size and shape of well-known kingdoms, and the position of important places. Yet even now ignorance in these respects is not very uncommon. What discrepancies, for example, in fixing the position of towns in Mexico! Different maps place the same city at points two hundred miles distant from each other. How imperfectly have the coasts of even the old civilized nations been mapped out, until comparatively modern times! Countries

which contained all the science of the world could not accurately give their own shape and dimensions. Italy, before the time of D'Anville (the earlier part of the eighteenth century,) was thought to be considerably larger than it really is; and that distinguished geographer was considered a very bold man in venturing to reduce it to proper magnitude. When the map of France was corrected by astronomical observations, it was found necessary to cut off more than a degree of longitude along the western coast, from Brittany to the southern part of the Bay of Biscay, and more than half a degree from the shores of Languedoc and Provence; which led Louis XIV. to say to the astronomers by whom the measurements were corrected, that "he was sorry to observe that their journey had cost him a large portion of his kingdom."

It was not until astronomy had made considerable advances, that geographical errors, of which the above are but specimens, began to be corrected. The discovery of the satellites of Jupiter, in 1610, by Galileo, furnished an important means for determining longitude with accuracy. It was many years, however, before the requisite tables and calculations were made, and the telescope perfected, so as to enable astronomers to avail themselves of this discovery. In 1671, one of the first effective observations was made to determine the difference in longitude between Paris and the observatory of Tycho Brahe, at Uraniberg, in Denmark.

In England the name of Halley is held in high honour among men of science, for many attainments and discoveries, and, among the rest, for applying the

principles of astronomy to geography. So remarkable was his early proficiency, that in 1676, at the age of twenty, he was sent to St. Helena to make a map of the stars in the southern hemisphere. While there, he observed a transit of Mercury across the disc of the sun. It occurred to him that this apparently trifling phenomenon might, by furnishing means for determining the sun's parallax, also furnish the elements for calculating the dimensions of the solar system. The transit of Venus seemed to him to afford still greater advantages, but that phenomenon occurs very rarely; one had taken place in 1639, the next would not happen till 1767. Halley earnestly exhorted astronomers who might then be alive, to observe that event. It *was* observed; and, so far as the subject of this sketch is concerned, it is interesting to remember that, in order to watch it, he undertook his first great voyage, which, as we shall see, so much enlarged our knowledge of the globe.

About the middle of the last century, the interests of commerce prompted some of the principal governments of Europe to fit out expeditions of considerable magnitude, partly for discovery, partly for the purpose of establishing colonies, and partly for the direct purpose of trade. The interests of science, too, began to be regarded as of sufficient consequence to be promoted at the public cost, and to warrant liberal expenditures. In 1764, Commodore Byron was sent on a voyage of discovery to the southern seas, and was absent nearly two years. One of his two ships was sheathed with copper, this being one of the first experiments for determining the value of that method of

preserving the bottoms of vessels from the attack of worms. After his return, Captain Wallis was sent out with the general design of prosecuting the discoveries still farther. He discovered the island Otaheite, or as it is now generally called, Tahiti. Of these voyages, however, commerce was, at least, as prominent a cause as science.

The first great expedition, fitted out mainly for scientific purposes, was that which sailed from Plymouth, August 26, 1768, under the command of Captain James Cook. The interest of the civilized world has ever clung to this distinguished navigator, in part, on account of his great professional merits, and in part, on account of his tragic death. This last circumstance has given him a hold upon the popular sympathies, which no other navigator ever obtained. About twenty years after the first voyage of Cook, the French commander, La Perouse, emulating his fame, and admiring his character, exceeded his model, perhaps, in the sad termination of his career. He sailed on a voyage of discovery, and his generation never heard of him again. For nearly forty years there was not the slightest clue to dispel the mystery which hung about his fate. But common minds need something tangible and palpable to arouse and retain their interest. In thousands of cottages in England and America were hung up rude prints of the "Death of Captain Cook;" while the mysterious fate of La Perouse, if we mistake not, produced, even among his own countrymen, its most lasting impression upon persons of comparatively high culture, and more likely to be affected by the gloomy obscurity of the unrevealing sea.

James Cook was born in Yorkshire, in the year 1728. His father was a day-labourer to a respectable farmer, and, when his son was two years old, became an under steward upon an estate near the village of Great Ayton. James was kept at work upon the farm till he was thirteen, when he was permitted to attend school. He studied arithmetic and bookkeeping, and is said to have exhibited a good deal of talent at figures. When a few years older, he was apprenticed to a shopkeeper, in a small fishing town about ten miles from Whitby. Here he manifested good judgment and considerable skill in accounts, but his inclinations began to lead him very strongly to the sea. His master, willing to indulge him, gave up his indentures, and he soon engaged himself with the owners of some vessels employed in the coal trade. This navigation, carried on upon a coast, at some seasons of the year very dangerous, became from that circumstance a nursery of skilful seamen. As Cook was diligent in his new occupation, and gave satisfaction to his masters, they favoured him with opportunities of learning the various parts of his profession; and, in the course of a few years, he made voyages, not only upon the immediate coast, but to Liverpool and Dublin, and also to the Baltic.

In 1752, he was made mate of a vessel of 400 tons, and, in the next year, received the offer of being commander of the ship. This, however, he saw fit to decline. Impressments for the British navy were carried on, at this time, to a great extent; and either to avoid being taken contrary to his own consent, or for some other reason which does not appear, he entered

on board the Eagle, a man-of-war of sixty guns, under the command of Captain (afterwards Sir Hugh) Palliser. He served on board this vessel with so much distinction, that, by aid of his friends, and the strong recommendation of the captain, he was appointed master of the Mercury, a small vessel belonging to the squadron about to proceed to the attack upon Quebec. He soon joined the fleet in the St. Lawrence, and his talents and resolution were not long in making themselves perceived.

The fleet was expected to co-operate with the land forces under General Wolfe ; but before this could be done, it was necessary to sound the river, so as to determine the channel. This was a difficult task, since it must be carried on in the face of a sagacious and watchful foe. It required a union of important qualities to enable one to perform the duty successfully. Cook was selected on the occasion, and entered upon the labour with accustomed resolution and skill. He carried on his operations in the night, and for some time was not perceived. At last he was discovered, and a large number of boats sent to cut him off. He fortunately became aware of the attempt in season to escape to the Island of Orleans. There was, however, little time for him to spare ; since, just as he stepped on shore, the Indians in pursuit entered the stern of his boat, and took possession of it. His task, however, was accomplished, and he had the satisfaction of laying before the admiral a full and accurate survey of the channel.

After the conquest of Quebec, he was appointed to examine carefully the difficult parts of the river, which

was not then familiar to the English. He soon was transferred to the Northumberland, the flag ship of the commodore at Halifax, as master. Notwithstanding his success thus far, he felt his ignorance of mathematics, and applied himself in the midst of his other labours, to the study of Euclid's Elements of Geometry, and, having mastered them, to astronomy. He also devoted himself more particularly to the study of hydrography, in which he soon had an opportunity of exhibiting his skill, by a coast-survey of Newfoundland, which had lately fallen into the power of the English, and which began to be regarded, especially by its governor, Sir Hugh Palliser, as of great consequence for its fisheries. It was chiefly from this governor's recommendation, that Cook was appointed Marine Surveyor of Newfoundland and Labrador; and a schooner was placed under his command in order to enable him to perform his official duties. An account of a solar eclipse, observed in Newfoundland, which he transmitted to the Royal Society in 1766, and the longitude of the place as computed from it, gained him a good deal of credit for a knowledge of the scientific part of his profession. During some interval in his service on the northern coast of North America, he seems to have been upon the West India station, where he is mentioned as having been sent by the commanding officer, as a bearer of despatches to the Governor of Yucatan.

In the meantime, the year 1769 was approaching, in which was to take place that transit of Venus, which Dr. Halley had urged upon the attention of astronomers, as of so much consequence in its possible re-

lation to science. The Royal Society were not forgetful of their duty : they presented an address to the king, stating the advantages of making the observation in another hemisphere, and prayed his majesty to fit out a vessel, and send it to the South Seas under their direction.

This request was favourably answered, and it only remained to select the proper person to entrust with the chief command. It was first offered to Alexander Dalrymple, chief hydrographer to the admiralty. This gentleman had already visited the eastern archipelago, had studied those regions with considerable zeal, and had shown much partiality for geographical researches. He was an earnest advocate also of the existence of a Southern continent, and early applied to the government to assist him in his schemes of discovery. He even went so far as to compose a code of laws for the republic which he was sanguine of one day founding in those remote shores. No one was to be admitted to the republic who would not subscribe to this code ; and if any one dissented from any of the laws, he was to forfeit all his property. This code was so odd in many of its features, so manifestly impracticable, or, if not impracticable, so unwise, that it was pronounced "the best possible model of the worst possible commonwealth."

Dalrymple refused to undertake the duties required, unless endowed with the amplest powers as the commander. Having never held a commision in the navy, the admiralty, remembering the perplexities arising from a similar arrangement on a former occasion, declined to accede to the demand. The hydrographer

would not recede, and the admiralty began to look out for another man. Cook was proposed. All who knew him spoke of him favourably. He was of steady courage, cool, sagacious, scientific. The offer was made to him, and he accepted it. He was promoted to the rank of lieutenant, or as some say, of captain, and allowed to select his ship. Instead of taking a frigate, or sloop of war, he showed his good sense by choosing a vessel built for the coal trade, with whose sailing qualities he was acquainted; which was better adapted to carrying the requisite stores; was less exposed in running near the coasts; was less affected by currents; and, in case of necessity, could be more easily repaired. It was of only three hundred and sixty tons burden, and he named it the Endeavour. It was fitted out with great care and liberality, and, for the sake of better accomplishing the scientific purposes of the expedition, was furnished with a corps of scientific men. Mr. Charles Green was named as the astronomer to observe the transit. Dr. Solander went as naturalist; and Sir Joseph Banks, afterwards President of the Royal Society, accompanied them for the sake of increasing his knowledge of natural history. Possessing a large fortune, he provided himself with draftsmen, and with everything which would conduce to success in his favourite pursuits, and proved a very valuable accession to the company. By the advice of Captain Wallis, then recently returned from his voyage round the world, the island of Otaheite (Tahiti) was fixed upon as the place for making the necessary observations.

At length, on the 26th of August, 1768, they sailed from Plymouth. Captain Cook was about forty years

old. He had risen to his honourable and important position by his own genius and fidelity. Confidence, that "plant of slow growth," had been liberally bestowed, deserved as it was by a long course of faithful effort. Having touched at Rio Janeiro, where the governor, at a loss to account for the expedition unless it were sent out for some hostile purpose, regarded them with so much suspicion, that they were hardly permitted to step upon shore, they directed their course to Cape Horn. Having landed upon Terra del Fuego, a party advanced incautiously so far into the country that the night surprised them, and they were in the utmost danger of perishing by the cold. Dr. Solander, who had travelled much in the northern regions of Europe, advised his companions to resist the approach of drowsiness which the cold would be likely to bring on. He himself was among the first to feel the benefits of his advice: under the influence of the torpor, he could hardly be kept awake by his associates, who dragged him along, and thus only saved his life. Two of Mr. Banks's servants lay down to rest in the snow, and were found dead the next morning.

It was a question among navigators at that time whether it was best to pass through the straits of Magellan, or round Cape Horn. Captain Cook took the latter course, and passed round the cape in thirty-four days. On the 13th of April, 1769, the voyagers arrived at Otaheite, and anchored in *Matavai* bay, Captain Cook immediately took measures to preserve the friendship of the islanders. He changed names with the chief, which, according to the customs of the region, was a kind of treaty of friendship. He drew

up a particular code for regulating the intercourse of the crew with the natives, marked with much good sense, and dictated by humanity. Tents were erected on shore for the sick, and an observatory established for watching the expected transit. As the day approached (the 3d of June), the anxiety was great lest something might occur to frustrate the main purpose of the expedition. Disturbance from the natives could perhaps be avoided, but a cloudy or tempestuous day they could not so easily guard against. Whatever precaution could be of any avail was carefully observed. A party was sent to another part of the island considerably to the westward of the main observatory, and still another sent to Eimeo, an island nearly sixty miles distant, so as to give as much security as possible. The day came, and the sun rose without a cloud. The observations at all the posts were most satisfactory, and contributed essentially to solve the great problem which interested the minds of scientific men. This transit has been truly said to form an epoch in the history of astronomy. Besides these observations at Otaheite, it was observed by the French in California, by the Danish at Wardhus in Lapland, by the Swedes at Kajaneborg in Finland, and by another party of the English at Hudson's Bay. By these five observations, the sun's parallax was determined with great exactness.

We will endeavour to make the importance of this understood. Suppose an object to be seen from two ends of a straight line, the angle formed at the object by these two converging lines of sight, is called the parallax. "The parallax of a celestial body is the angle under which the radius of the earth would be

seen if viewed from the centre of that body. Suppose, when the moon is in the horizon at the instant of rising or setting, lines to be drawn from her centre to the spectator and to the centre of the earth; these would form a rightangled triangle with the terrestrial radius, which is of known length; and as the parallax or angle at the moon can be measured, all the angles and one side are given; whence the distance of the moon from the centre of the earth may be computed. The parallax of an object may be found, if two observers under the same meridian, but at a very great distance from one another, observe its zenith distance on the same day at the time of its passage over the meridian. By such contemporaneous observations at the Cape of Good Hope and at Berlin, the mean horizontal parallax of the moon was found to be 3,459", when the mean distance of the moon is about sixty times the mean terrestrial radius, or 237,360 miles nearly." Although this method was sufficiently accurate for the moon, it was found not to answer for the sun, whose distance is so great that the slightest error in the observation would lead to a great error in the results. The transit of Venus supplied the deficiency. "If we could imagine that the sun and Venus had no parallax, the line described by the planet on his disc, and the duration of the transit, would be the same to all the inhabitants of the earth; but as the semidiameter of the earth has a sensible magnitude when viewed from the centre of the sun, the line described by the planet in its passage over his disc appears to be nearer to his centre or farther from it, according to the position of the observer; so that the duration of

the transit varies with the different points of the earth's surface at which it is observed. This difference of time, being entirely the effect of parallax, furnishes the means of computing it from the known motion of the earth and Venus, by the same method as for the eclipses of the sun." *

The transit which Cook was sent out to observe, lasted at Otaheite six hours; and the difference between that and the duration at Wardhus, in Lapland, was eight minutes. From this and some other observations, the sun's horizontal parallax was found to be 8"577, and the distance of the sun from the earth, about ninety-five millions of miles. Can it soon cease to be a matter of astonishment to the unlearned, that by merely knowing the fact that the passage of a little planet, in appearance simply a black speck, across the face of the sun, appeared to an observer in one hemisphere eight minutes longer than it did to an observer in another hemisphere, we can tell the distance of the sun from the earth in miles, and compute the dimensions of the solar system?

During his stay at Otaheite, Cook won the confidence of the natives, and was enabled to learn much of their customs and manners. After having completed his observations, he circumnavigated the island, and visited many others in the vicinity. A native of high rank and considerable intelligence, named Tupia, wished to accompany the English. His request was readily granted, and he proved of much service. The group of islands was named by Captain Cook, the

* Mrs. Somerville. The Connection of the Physical Sciences.

Society Islands, which name they have ever since retained.

Sailing thence, they made land again on the 6th of October, and soon concluded that it must be New Zealand. In exploring its shores, they discovered a secure and capacious harbour, which they named *Queen Charlotte's Sound*. They also passed through the strait between the northern and southern island, and thus determined that this land was not, as formerly supposed, a part of a southern continent. To this strait geographers have very properly given the name of the navigator who discovered it, and who afterwards circumnavigated both the islands. This may be considered his first grand geographical discovery.

From New Zealand the expedition proceeded to New Holland; and, from the variety of new plants found by the naturalists in the inlet where they anchored, the place received the name of *Botany Bay*, a name which, in later times, is suggestive of anything sooner than the sweet odours of flowers and the simplicities of rural life. Along the borders of this new country they proceeded for two thousand miles, exploring the coasts, and making a variety of observations. They had hardly met with an accident, when one night the ship struck upon some choral rocks with so much violence that it seemed as if it would go to pieces. By throwing overboard the guns and such stores as could be spared, she was got afloat, and, to their wonder, the leak did not increase. On finding a harbour where repairs could be made, they examined the bottom, and found a large piece of coral which had broken off, and remained fixed in the hole

which it had knocked in the timbers. But for this singular and providential circumstance, the ship would have filled and sunk as soon as she was clear of the reef.

After repairing, Cook sailed round the northern part of New Holland, and gave the name of *New South Wales* to the portion which he had surveyed. Thence by way of Batavia and the Cape he made his way home, and on the 12th of June, 1771, after an absence of nearly three years, came to anchor in the Downs. The latter part of the voyage was rendered sad by the loss of Dr. Solander, Mr. Green, the astronomer, and many of the crew. But on the whole, it was considered that great results had been arrived at by the expedition, not only for astronomy and geography, but incidentally for many other of the natural sciences. The name of the fortunate commander became at once famous. One part of his discoveries led the way to another expedition. New Zealand was found, as before stated, not to be the extremity of a continent, but an island. The speculations relative to the great *Terra Australis Incognita* were at once revived by the announcement. It was determined to send out another expedition, mainly to settle the question, if possible, of the existence of such a continent. The king was pleased with the proposal, and the Earl of Sandwich, at the head of the Admiralty, seconded it with much satisfaction. Two ships, the Resolution, of four hundred and sixty-two tons burden, and the Adventure, of three hundred and thirty-six, were fitted out, and Captain Cook appointed commander. The Adventure was commanded by Captain Furneaux. Naturalists and astronomers were chosen to have

charge of the scientific observations, and the ships were amply stored with everything that would conduce to the comfort and health of the crews, particularly with those remedies which might guard against the peculiar ills to which the confinement of a long voyage rendered them liable.

The second voyage was commenced on the 13th of July 1772, on which day the vessels left Plymouth. After an absence of more than three years, and having sailed more than 70,000 miles, the adventurous navigators cast anchor again at Portsmouth, Captain Cook's ship having lost but one man by sickness. For the particulars of this interesting voyage, the reader must look to the complete accounts of it which have been published. They did not succeed in discovering a southern continent, but demonstrated that what had been mistaken for such by previous navigators, especially the French, had no existence. Their progress south was impeded by immense quantities of ice. Some of the icebergs were two miles in circumference and sixty feet high, and yet the waves ran so high as to break entirely over them. They found, however, to their surprise, that the ice islands were fresh, and hence they derived from them an abundant supply of pure water. From the time of leaving the Cape of Good Hope till they reached New Zealand, during which they had been at sea one hundred and seventeen days, and had sailed 3,660 leagues, they did not see land.

At New Zealand, Captain Cook endeavoured to establish friendly relations with the chiefs, and placed on shore a ram and ewe, and two goats, a male and

female. He also stocked a garden with the seeds of vegetables suited to the climate. In December 1773, the voyagers crossed the antipodes of London, and had the satisfaction of feeling that they were at the farthest possible point from home. They proceeded also to their old station at Otaheite, and subsequently visited the *Friendly Islands*, as Captain Cook named them. He also discovered *Sandwich Island*, so called by him, after his patron, the Earl of Sandwich. He examined carefully some of those clusters of islands in which the Pacific abounds, to one of which he gave the name of *New Hebrides*. Another island which he discovered he called *New Caledonia*, and another still, which at the time was entirely uninhabited, *Norfolk Island*. In the course of his exploration, he sailed far south without meeting with land, and, from the height and great swell of the waves, concluded there could be no continent in that direction, unless so near the pole as to make it of no use for the purposes of emigration or commerce. It was left for the American Exploring Expedition, sixty-six years afterwards, to determine the question of a southern continent, and mark out a long outline of its coast.

Cook was elected Fellow of the Royal Society, and on the evening when he was first present, "a paper was read containing an account of the method he had taken to preserve the health of his crew during the long voyage." He was also rewarded by having bestowed upon him the Copley gold medal, which was annually given to the author of the best experimental paper. This medal was not conferred, however, till he had sailed on his third and last voyage, and he

never received tidings of the honour. The government bestowed upon him more substantial proofs of the satisfaction with which his efforts were regarded. He was raised to the rank of Post Captain, and appointed one of the captains of the Greenwich hospital. By his second voyage, the question of the southern continent was put to rest for a time; but the maritime energy of the British nation, proverbial for its ceaseless activity, only revived more directly the question, which had frequently been agitated, of a north-west passage. A reward of L.20,000 was offered to any one who should discover a passage to the Pacific, in the direction of Hudson's and Baffin's bays. In order to obtain information, Captain Phipps was despatched towards the north, and penetrated to within nine and a half degrees of the pole. The Admiralty, with Lord Sandwich at their head, held consultations with the most experienced captains relative to the proposed expeditions. On one of these occasions, Captain Cook was present. His hardships and services on former occasions had been so many and so prolonged, that no one thought of forcing him to leave his quiet retreat, and again brave the dangers of unknown seas. But the conversation on the benefits which were likely to follow from the hoped-for discoveries, so excited his old ardour, that he lost no time in offering his services as commander in this new field of peril and duty. They were readily and gladly accepted. The act of Parliament, offering the reward of £20,000, was so amended as to include public ships, as well as private, and to allow the attempt to be made from the Pacific Ocean, as well as the Atlantic.

The Resolution and the Discovery were the two ships fitted out on this occasion, the latter of which was commanded by Captain Edward Clerke. Mr. Bayley, the astronomer, and Mr. Anderson, the naturalist, who had accompanied Captain Cook onhis former voyage, were selected to go with him again. Omai, a native of the Society Islands, who had accompanied Captain Furneaux to England, was sent back loaded with gifts, and with whatever might tend to the improvement of the natives of his island. On the 12th of July, 1776, the expedition sailed from Plymouth. At the Cape of Good Hope, they took on board a large freight of live stock for the supply of the Islands in the South Seas. Among them were horses, cows, sheep, pigs, and goats. Sailing from the Cape, and passing the islands which Cook named *Prince Edward's*, they came to *Kerguelen's Land*, which they soon found to be only an island instead of a continent, as its discoverer had supposed. On shore, they discovered a bottle, hung by a wire to the rocks, in which was a parchment, with an inscription, declaring that Kerguelen had visited the shore in 1772 and 1773. This bottle, Cook left as it was, having added the date of his voyage and the name of his ships.

On the 8th of December, the voyagers lost sight of the *Society Islands*, and, sailing northward, on the 18th of January, 1778, discovered an island of considerable size, and subsequently two others in the vicinity. The natives were struck with great astonishment at the sight of their unknown visitants, and by their actions showed that they had never before seen a European. They regarded Captain Cook as a

superior being, and, when he came on shore, fell on their faces. It was a matter of great surprise to the voyagers, that the language of the natives was the same as that of the *Society Islands*, nearly three thousand miles distant, and of New Zealand still farther off.

To this group, now discovered for the first time, Captain Cook, in compliment to his patron, gave the name of *Sandwich Islands*. Of all lately discovered groups, this has become by far the most important and most interesting. Possessing less fertility than many other Pacific islands, they have become known by their surprising conversion to Christianity, and their rapid advancement in civilization, and national importance. Their geographical position has been one cause of this, but the most prejudiced cannot help acknowledging that to Christianity they really owe all that they have become. This alone has given them strength to resist the corruptions which the wickedness of the whites has usually entailed upon the savages who have come into connection with them. This alone has given them the intelligence and elevation, which, in less than seventy years from their discovery, has assigned them an established position among the civilized nations of the earth. Commerce certainly has not done it,—such an effect has never been found elsewhere to follow the efforts of trade; their natural talent has not done it, for in native capacity they do not exceed the inhabitants of a thousand other barbarous islands; but the power of the gospel, aiding and directing all other energies, has been the moving cause of this singular and remarkable result.

After remaining at the Islands ten days, and carrying on a friendly barter in old iron, nails, and other articles of considerable value to the natives, which were given for provisions, Captain Cook sailed for the American coast. This he reached without difficulty, and entered the deep harbour of Nootka Sound. On the first night, he anchored in water nearly five hundred feet deep, and subsequently found the shore so bold that his ships were fastened to the trees by ropes. It is in this part of the voyage, that the name of the celebrated traveller, Ledyard, appears in connection with that of the more celebrated navigator. Born in Connecticut, and educated in part at Dartmouth college, after a variety of adventures, Ledyard had found his way to England, and embarked in the expedition with Cook, as corporal of the marines.

From Nootka Sound, where the natives showed evidently that they had come in contact with Europeans* the expedition made its way towards Behring's Straits, which they found to extend farther east than delineated in the maps of the time. In passing through the straits, both shores were visible at the same time. Behring himself, when he sailed through, saw but one shore, and was not aware of the extent of his discovery. They advanced as far north in the month of August as the ice would permit them, and Cook then determined to return to winter at the Sandwich Islands, and resume his exploration in the following year.

On arriving, on their way back, at the island of

* Two silver spoons were among the articles obtained from the natives by trade. They had stolen them from some Spanish navigators four years before.

Onalaska, on the north-west coast, they found decided evidences of the presence of Europeans. While there, a young chief, attended by two Indians, who were supposed to be Asiatics, brought, as a present to Captain Cook, a salmon pie. He also gave him to understand by means of signs, that there were other white men in the country who had come in ships much larger than the native canoes. It turned out that these white men were Russians in search of furs. By the inspection of their charts, Captain Cook was satisfied of the extent and originality of his discoveries.

On returning to the Sandwich Islands, which the ship reached in November, Cook discovered Maui or Mowee, which he had not before visited, and soon afterwards, the still larger island of Owhyhee, or, as it is now written, Hawaii. As this was apparently of more consequence than any other island of the group, Captain Cook spent seven weeks in sailing round it, and surveying its coasts, and at last came to anchor in Kealakeakua bay, on its western side. "To our disappointment in the expedition to the north," says Captain Cook, in the conclusion of his journal, which from his then impending fate has acquired a peculiar interest, "to this disappointment we owed our having it in our power to revisit the Sandwich Islands, and to enrich our voyage with a discovery, which, though the last, seemed in many respects to be the most important that had hitherto been made by Europeans throughout the extent of the Pacific Ocean."

As the vessels anchored in the harbour, the natives flocked to the shore in prodigious crowds. Three thousand canoes, filled with at least five times as many,

people, were counted in the bay. The intercourse between them and the ships was peaceful and harmonious. Cook visited the shore with much ceremony. Chiefs, with poles as insignia of authority, made way for his boat among the canoes, and another set of officers received him at the shore.

For some days a good understanding was kept up on both sides. Cook was invited to dine with the king, and, in return, exhibited some fireworks on shore, to the great wonder and even terror of the natives.

In the course of a few weeks, the respect of the islanders for their unknown visitors began to diminish. The novelty had passed away ; and the sailors, by the exhibition of too many vices, gave palpable evidence that they were but men, and men, too, not deserving of any excessive veneration. Contests began to occur between the two parties: the natives were thievish ; the sailors, rather harsh and overbearing. The good understanding between Cook and the king does not seem to have been diminished at all, and the great navigator appears not to have been aware that he was essentially losing ground with the natives. Wanting wood for his vessels, on one occasion, with singular and for him remarkable disregard for the superstitious feelings of the natives, he offered two iron hatchets for the fence which surrounded the sacred *morai*. The chiefs refused the price in astonishment. The fence was then taken by force, and the hatchets left, as if with a show of justice ; but the people were much exasperated at the sacrilege, for the *morai* was the depository of the dead, a place where the images of their gods were kept, and solemn ceremonies performed.

After remaining in the bay for nearly three weeks, recruiting the crew, and laying in a stock of provisions, they prepared to sail on another cruise. Water only was wanted ; and, not being able to obtain any of a good quality, they determined to seek it at some of the adjacent islands. Not long, however, after the ship had left the bay, a violent storm came on, by which one of the masts of the Resolution was so much injured as to render it necessary to return immediately in order to repair it. It was evident, in sailing to their anchorage again, that the feelings of the natives had greatly changed. Not a single canoe greeted their second arrival, and the villages were comparatively destitute of inhabitants. Provisions came in, but inferior in quantity and quality ; while a higher price was demanded, and the natives, particularly the chiefs, were desirous to get knives and dirks in exchange. They became bolder in their thieving. On one occasion, a native snatched up the iron tongs and other tools at the forge of the armourer, while he was at work, and, rushing to the ship-side, threw himself into the water, where he was taken up by a canoe, and safely conveyed to the shore. The party that was sent to regain the articles were maltreated, and returned unsuccessful. A short time after this, the large cutter of the Discovery was stolen in the night. This was so grave an offence that it became necessary to take immediate measures to check the audacity of the islanders. The captains of the two ships concluded, on consultation, that it would be best to get possession of the person of the king, and keep him prisoner until the boat should be restored. This method had been

pursued by Cook with success on former occasions. Captain Clerke, being very low in health, begged to be excused from actively engaging in the affair, and asked that his duties might be transferred to his superior, to which Captain Cook assented, and immediately made provision for landing. Boats were despatched to the mouth of the harbour, to prevent communication from other places. Cook went on shore in his pinnace, with a guard of ten men, beside the boats crew, while the launch and the small cutter accompanied him.

Upon landing, some of the usual marks of respect were manifested ; but various circumstances indicated a hostile state of feeling. The women and children had left the town. Captain Cook himself, although not fully aware of the state of feeling, was evidently somewhat suspicious. On reaching the king's house, he endeavoured to persuade the friendly old man to go with him to the ship. This the king at last consented to do; but the chiefs, who began to assemble in great numbers (Ledyard says there were three or four hundred people, although, in passing through the town, they did not see twenty), when they found out what was wanted, held him back. In the meantime one of the boats stationed in the harbour, seeing a canoe put off from the shore, fired a shot in order to stop it, and unfortunately killed a chief of distinction who was on board. The news of this disaster was brought to the crowd, while they were in the state of excitement occasioned by the attempt to take the king, and added greatly to their exasperation. Captain Cook and the guard were now retreating to the boats, the king still in company. On approaching the water, however, it

became evident that it would be impossible to succeed in getting him on board. His wife threw her arms about his neck, and, with the aid of two chiefs, compelled him to sit down.

While in this situation, a chief, with an iron dagger, was seen to approach, as if with the design of stabbing Cook. The Indian was pointed out to him, and he fired at him with a blank cartridge. The man looked at his mat which was cast about him, and seeing that it was not *burnt*, felt secure, and rushed forward a second time, when he was shot down. We shall give the remainder of the account in the words of Ledyard, who was present as corporal of the marines, and whose account is probably as accurate as can be obtained :—

"Cook, perceiving the people determined to oppose his design, and that he should not succeed without further bloodshed, ordered the lieutenant of marines, Mr. Phillips, to withdraw his men, and get them into the boats, which were then lying ready to receive them. This was effected by the sergeant; but the instant they began to retreat, Cook was hit with a stone, and perceiving the man who threw it, shot him dead. The officer in the boats, observing the guard retreat, and hearing this third discharge, ordered the boats to fire This occasioned the guards to face about and fire, and the attack became general. Cook and Mr. Phillips were together a few paces in the rear of the guard, and, perceiving a general fire without orders, quitted Teraiobu (the king), and ran to the shore to put a stop to it; but not being able to make themselves heard, and being closely pressed upon by the chiefs, they joined the guard, who fired as they retreated.

Cook, having at length reached the margin of the water, between the fire of the boats, waved with his hat for them to cease firing and come in; and while he was doing this, a chief from behind stabbed him with one of our iron daggers, just under the shoulder blade, and it passed quite through his body. Cook fell with his face in the water, and immediately expired. Mr. Phillips, not being able any longer to use his fusee, drew his sword, and, engaging the chief whom he saw kill Cook, soon despatched him. His guard, in the meantime, were all killed but two, and they had plunged into the water, and were swimming to the boats. * * * He himself, being wounded, and growing faint from loss of blood and excessive action, plunged into the sea, with his sword in his hand, and swam to the boats."

The English accounts vary but little from this. They cast great blame upon the lieutenant who commanded the launch, for pushing off the shore, instead of drawing in to the assistance of the attacked party. By his own account he misunderstood the signal of Cook in waving his hat. By this unfortunate mistake, however, the pinnace became so crowded, that the marines were unable to act efficiently for the protection of their comrades and commander. According to the same authority, Captain Cook expostulated with the natives for their conduct; and when approaching the pinnace, and covering the back of his head with his hand, to shield it from the stones, was struck with a heavy club, which so nearly stunned him that he fell into the water, when he was stabbed in the back by another Indian, and, after struggling for some time in the water, was finally despatched by another blow

from a club. A part of his bones were finally recovered, and committed to the deep with the usual ceremonies and honours.

Thus unfortunately perished one of the most sagacious, enterprising, and successful navigators of his own, or of any other times. He was temperate, patient of toil and hardship, of cool and determined courage, and great presence of mind, of plain manners, and humane disposition. It is possible that the confidence arising from great success rendered him for once too little observant, or too regardless, of the perils to which he was exposed. But his faults he expiated with his life, while his virtues have gained for the whole world a rich and lasting reward.

The expedition, soon after this melancholy event, sailed again for the north, but did not effect any great discovery. Captain Clerke, who had thrice circumnavigated the globe, died at Kamschatka. The naturalist, Mr. Anderson, had died at Onalaska the year before. From the north-west coast they sailed to China, and reached home after an absence of four years and nearly three months. War had broken out between England and France before they returned ; but, to the great honour of the latter, the cruisers were ordered to treat the scientific expedition as a friendly power.

In order to have before us at one view the merit of the discoveries of Captain Cook, it is worth while to recapitulate them, and to consider how much they have affected the commercial interests of civilized nations. He discovered New Caledonia and Norfolk Island, New Georgia and Sandwich Land, and many smaller islands in the Pacific ; surveyed the Society

Islands, the Friendly Islands, and the New Hebrides; determined the insularity of New Zealand; circumnavigated the globe in a high southern latitude, so as to decide that no continent existed north of a certain parallel; explored the then unknown eastern coasts of New Holland for two thousand miles; determined the proximity of Asia to America, which the discoverer of Behring's Straits did not perceive; and discovered (or re-discovered, if it be true that a Spanish navigator had seen them before, of which there is some slight evidence) the most important group in the Pacific and, at any rate, so brought the Sandwich Islands to the knowledge of the civilized world, as to make their value appreciated. What perhaps is quite as important and quite as much to his honour, "his surveys afford the materials of accurate geography." He was such a vigilant and untiring observer, and availed himself so constantly of all the improvements suggested by science, that his errors are very few, and he laid down the configuration of the coasts with so much correctness as to have attracted the notice and received the willing praise, of the most accomplished seamen who have succeeded him. It was probably owing to him, that an English colony was established in New Holland, and possibly, although the influence is more remote, that an English settlement has been made in New Zealand. The fur trade took its origin with this last voyage, and his intercourse with the islands of the Pacific laid the foundation of the abundant navigation which now cheers those distant seas. His home was upon the sea, and no man has done more to make every ocean familiar to others.

On the north side of the little bay of Kealakeakua, in Hawaii, the natives point out a rock, jutting into the water so as to afford a convenient landing place, as the spot where Captain Cook fell. A stump of a cocoa-nut tree is near by, where they say he expired. The top of the tree has been carried to England, and is rightfully treasured among the monuments of enterprise and courage in the Museum of Greenwich Hospital. On the stump, which has been capped with copper for its preservation, is an inscription, of which the following is a part :—

NEAR THIS SPOT
FELL
CAPTAIN JAMES COOK, R. N.,
THE
RENOWNED CIRCUMNAVIGATOR,
WHO
DISCOVERED THESE ISLANDS,
A.D. 1778.

BENJAMIN WEST.

THE subject of the following sketch, one of the earliest and most distinguished of American painters, was a native of Pennsylvania. He was born near Springfield, Chester county, on the 10th of October 1738. His family were Quakers, and emigrated to America in 1699: his father, however, being left at school in England, did not join his relatives until 1714. The native tendencies of West were early manifested. It

In 1760, at the age of twenty-one years, the artist left his country, to which he never again returned. His voyage was prosperous, and he was kindly received at Leghorn by Messrs. Jackson and Rutherford, the correspondents of Mr. Allen. He soon started for Rome, carrying letters to many persons of distinction The circumstances under which he came were very favourable. He was introduced to the most valuable society, and was an object of considerable curiosity as an American and a Quaker, who had come to study the fine arts. On being introduced to Cardinal Albani, who, though old and blind, was considered a great judge of art, one of the first remarks made by the prelate, as he passed his hands over the face of the young artist, in order to judge of his countenance, was, "This young savage has very good features, but what is his complexion?" Is he black or white?" The English gentleman who introduced him replied that he was "very fair." "What!" said the cardinal, "as fair as I am?" As the complexion of his eminence was a deep olive, this question produced great merriment, and the expression "as fair as the cardinal," became for the time a proverb. "It was a matter of astonishment," says one of West's biographers, "when it was found that the young man was neither black nor a savage, but fair, intelligent, and already a painter. West became emphatically the lion of the day in Rome." *

* The mistake as to the complexion of Americans, has been made elsewhere than in Italy. An acquaintance of ours, who was educated in part at Versailles, France, was frequently an object of curiosity to visiters, who more than once, on seeing him for the first time, remarked, with a strong exclamation of surprise, *Il n'est pas noir*—"He is not black."

In order to exhibit his talent, West painted the portrait of a gentleman to whom he was indebted for many favours—Mr. Robinson, afterwards Lord Grantham. It was received with great approbation by the judges of art, and pronounced superior, in some respects, to the productions of Raphael Mengs, who was at this time the first painter in Rome. Mengs himself very cordially commended the young American, and gave him some excellent advice. "You have already," said he, "the mechanical part of your art. What I therefore recommend to you is to examine everything worthy of attention here, making drawings of some half-dozen of the best statues; then go to Florence, and study in the galleries; then proceed to Bologna, and study the works of the Caracci; afterwards visit Parma, and examine attentively the pictures of Correggio; and then go to Venice, and view the productions of Tintoretto, Titian, and Paul Veronese. When you have made this tour, return to Rome, paint a historical picture, exhibit it publicly, and then the opinion which will be expressed of your talents will determine the line of art which you ought to follow."

This judicious advice, West was prevented from following immediately, by illness, brought on perhaps by the continued excitement to which he was subjected. He returned to Leghorn, for greater repose; nor was he, for nearly a year, able fully to resume his studies and labours as an artist. During this time, the reputation he had acquired at Rome became known in America, and his generous friends, Mr. Allen and Governor Hamilton, determined that the career of so promising an artist should not be impeded by want of

means. They sent orders to their bankers at Leghorn, to give him unlimited credit. This great and unlooked-for liberality was of the utmost importance to Mr. West, whose limited funds were nearly exhausted. Mr. Galt very properly remarks, that "a more splendid instance of liberality is not to be found even in the records of Florence. The munificence of the Medici was excelled by that of the magistracy of Philadelphia."

He now commenced his tour under favourable auspices, and visited, with great advantage, galleries of the different schools in the most important cities of Italy. He was everywhere received with favour, and was chosen a member of the Academies in Parma, Bologna, and Florence. A similar honour was afterwards conferred upon him in Rome. While in Italy, he painted his "Cimon and Iphigenia," and "Angelica and Medora," which established his reputation as a historical painter. He also made a very excellent copy of the St. Jerome of Corregio. This picture was, and we presume is now, in possession of the family of Mr. Allen, and in America.

Having now accomplished his purposes in visiting Italy, he began to think of returning home, but, in accordance with the advice of his father, determined first to visit England, the mother country, to which the colonists still looked with great affection. His arrangements were soon made, and he journeyed through France, visiting whatever was worthy to be seen, and on the 20th of June, 1763, arrived in London. As it was not then his intention to remain in England, he immediately visited the collection of paintings in Lon-

don, and at Hampton Court, Windsor, and Blenheim; and also spent some time with the friends of his father, who resided in Reading. In the meantime, he became acquainted with the most noted of the British painters, among whom was Sir Joshua Reynolds, and with Mr. Burke, whose knowledge of art was as accurate and profound as his knowledge of the science of government.

Encouraged by an examination of the works of the popular painters, as well as by the voice of his friends, he determined to try his success as a painter. In the department of historical painting, he was almost without a rival. There was then no distinguished historical painter in England. He exhibited some of his paintings, and received great praise and encouragement. As an illustration, however, of the state of English taste at this time, and of the timidity of the lovers of art in purchasing the productions of a modern artist in this the highest department of skill, it is stated, that, while one of West's earliest paintings, founded on the story of Pylades and Orestes, attracted so much attention that his servant was employed from morning till night in opening the door to visitors, and received a considerable sum of money by showing it, the master was obliged to content himself with empty praise; "no mortal ever having asked the price of the work, or having offered to give him a commission to paint any other subject."

It was not long, however, before his merit was seen, and his skill employed. He painted for Dr. Newton, the "Prting of Hector and Andromache;" and the "Return of the Prodigal Son," for the Bishop of Wor-

cester; and soon received the liberal offer of seven hundred pounds a-year from Lord Rockingham, if he would embellish with historical paintings his mansion in Yorkshire. He preferred however, to take his chance with the public.

Although he now felt himself established in England, on account of his recent success, he still thought of returning for a time to America, in order to marry a lady to whom he had long been attached. Some of his friends, however, more prudent than himself, feared that his absence might avert some portion of the public favour, and suggested another expedient, to which the cool and considerate artist yielded. The result was, that Miss Shewell accompanied West's father to England, and was married to the painter, on the 2d of September 1765.

Through the kindness of Dr. Drummond, archbishop of York, West was introduced to the king, George III., by whom he was received with very great kindness. The picture of "Agrippina," painted for the archbishop, was exhibited to his majesty and to the queen by the artist in person; and, before he retired from the room, an order was given for painting the "Departure of Regulus from Rome," the subject being suggested by the king himself. This was the beginning of an acquaintance with the monarch, we may almost say of friendship, which continued for forty years.

Trifling circumstances sometimes do much to extend a person's reputation. An amusing writer says, "that the Duke of Wellington is the best known man in London, partly because of his victory at Waterloo, and partly because of his very remarkable *nose*." We will

give an anecdote of West, as we find it in his biography by Allan Cunningham :—"West was a skilful skater, and in America had formed an acquaintance on the ice with Colonel, afterwards too well known in the Colonial war, as General Howe. This friendship had dissolved with the thaw, and was forgotten, till one day the painter, having tied on his skates at the Serpentine, was astonishing the timid practitioners of London by the rapidity of his motions, and the graceful figure which he cut. Some one cried out, 'West! West!' it was Colonel Howe. 'I am glad to see you,' said he, 'and not the less so that you come in good time to vindicate my praise of American skating.' He called to him Lord Spencer Hamilton, and some of the Cavendishes, to whom he introduced West as one of the Philadelphia prodigies, and requested him to show them what was called 'the salute.' He performed the feat so much to their satisfaction, that they went away spreading the praise of the American skater over London. Nor was the considerate Quaker insensible to the value of such commendations: he continued to frequent the Serpentine, and to gratify large crowds by cutting the Philadelphia Salute. Many, to their praise of his skating, added panegyrics on his professional skill; and not a few, to vindicate their applause, followed him to the easel, and sat for their portraits."

British artists, at the time when West arrived in England, were associated under the name of "The Society of Incorporated Artists," into which the American was admitted. While he was painting his *Regulus* for the king, dissentions arose in the Society, which resulted in the secession of Reynolds and West among

others, and the formation of the Royal Academy, of which Reynolds was elected President. "The death of Wolfe," which West soon painted, has ever been considered as one of his best productions; it is also worthy of remark, as having led to a great change in the practice of English artists. Until then, it had been common for them to represent the moderns with the costume of Greeks and Romans. West determined to throw aside this pernicious habit, and to represent the English and French generals and soldiers in the actual military dress of the day. He thought he should gain far more in the life and truth of expression, than he should lose in picturesqueness and grace. He was encountered, however, by the strong prejudices of the public, and the decided opinion of the painters. The Archbishop of York and Sir Joshua Reynolds took particular pains to dissuade the artist from the hazardous experiment. The result showed the good judgment of West. He has represented the real event as it presented itself to his own mind, idealizing it only so far as is necessarily demanded by the laws of art. Reynolds visited the painting again when it was finished; and after sitting before it for half an hour, and examining it with minute attention, he rose, and said to Dr. Drummond, who had again accompanied him, "West has conquered; he has treated his subject as it ought to be treated; I retract my objections. I foresee that this picture will not only become one of the most popular, but will occasion a revolution in art."

Being now fully in favour with the public, and enjoying the royal patronage without reserve, the painter

formed designs commensurate with his honourable position. He not only executed various works upon classical and historical subjects, but suggested a series of pictures to illustrate the progress of revealed religion. "No subtle divine," says Mr. Cunningham, "ever laboured more diligently on controversial texts than did our painter in evolving his pictures out of this grand and awful subject. He divided it into four dispensations,—the Antediluvian, the Patriarchal, the Mosaical, and the Prophetical. They contained in all thirty-six subjects, eighteen of which belonged to the Old Testament, the rest to the New. They were all sketched, and twenty-eight were executed, for which West received in all twenty-one thousand seven hundred and five pounds. A work so varied, so extensive, and so noble in its nature, was never before undertaken by any painter."

When the war broke out between England and the American colonies, West was much distressed by it, but still preserved the favour of George III., and devoted himself assiduously to his art. He was enabled by his position to afford aid to Americans in England, which he was always very ready to do, and perhaps to communicate useful intelligence to the king respecting the resources of his native land.

On the death of Reynolds, in 1792, West was elected his successor as President of the Royal Academy, which position he retained, with the exception of a few months, until his death. The king on this occasion, wished to confer upon him the distinction of knighthood; an honour which the painter saw fit to decline.

While the health of George III. remained good, West was never at a loss for a patron; but when the kings mind became disordered, and England was governed by a regency, the favour of the court was withdrawn, the order for paintings was withheld, and the doors of the palace shut upon him. During this period, availing himself of the general peace in Europe, in 1802, he visited Paris, where were then collected by the rapacity and taste of the First Consul, the choicest gems of art, taken from all the galleries of Europe. He was received with great honour by artists and by statesmen, as the President of the British Academy, and had several interviews with Bonaparte. Under these circumstances, it is not surprising that he ever looked upon his visit to France with pleasing recollections.

When the king recovered his health, West was at once readmitted to favour, and an order was immediately given for him to proceed with his paintings. His salary of one thousand pounds per annum was restored, and continued to be regularly paid until the final superannuation of the monarch, when it was stopped without the least previous intimation.

West was now between sixty and seventy years of age: he had received large sums for his paintings, but he had been a long time in executing them, and his necessary expences for a house and painting-room and gallery were great. He found himself, in his old age, without a fortune, and thrown aside by the court. Without being at all daunted, however, he commenced a series of works, some of which proved to be among his very best. The first that he exhibited was "Christ

healing the Sick," which he designed for the hospital in Philadelphia. When exhibited in London, it attracted crowds, and commanded such admiration that the British Institution offered him three thousand guineas for it. West accepted the offer, "on condition that he should be allowed to make a copy with alterations." In the copy which he transmitted to Philadelphia, he not only made alterations, but added an additional group. It was exhibited by the trustees of the hospital, and the receipts in the first year after its first arrival, are said to have been four thousand dollars. Among the other great works painted at this period, are the "Christ Rejected," and "Death on the Pale Horse." These are among his best known works in this country, and are remarkable for their grandeur and power.

In 1817, when he was seventy-nine years old, he was afflicted by the loss of his wife, who for more than fifty years had been his constant companion. He himself was feeling the pressure of old age, but still pursued his favourite occupation. He sat among his pictures; his hand had lost something of "its cunning," but still continued to sketch and to paint. At length, on the 11th of March 1820, "without any fixed complaint, his mental faculties unimpaired, his cheerfulness uneclipsed, and with looks serene and benevolent, he expired, in the 82d year of his age. He was buried beside Reynolds, Opie, and Barry, in St. Paul's Cathedral. The pall was borne by noblemen, ambassadors, and academicians; his two sons and grandson were chief mourners, and sixty coaches brought up the splendid procession."

West was not above the middle height, of a very fair complexion, with a serene brow and a penetrating eye. He was patient, methodical, and extremely diligent. He left upwards of four hundred paintings and sketches in oil, many of them of a large size, besides more than two hundred original drawings in his portfolio. It was ascertained by calculation, that, to contain all his productions, "a gallery would be necessary four hundred feet long, fifty broad, and forty high." In so large a number of productions there must be great differences as to merit. If his genius was not of the highest kind, it was certainly very prolific, and sometimes seemed to surpass itself. Critics of high merit have pronounced him, "in his peculiar department, the most distinguished artist of the age in which he lived." "In his 'Death on the Pale Horse,' painted when he was nearly eighty," says Cunningham, "and more particularly in his sketch of that picture, he has more than approached the masters and princes of the calling. It is indeed irresistibly fearful to see the triumphant march of the terrific phantom, and the dissolution of all that earth is proud of, beneath his tread. War and peace, sorrow and joy, youth and age, all who love and all who hate, seem planet struck. 'The Death of Wolfe,' too, is natural and noble; and the Indian Chief, like the Oneida Warrior of Campbell,

'A stoic of the woods, a man without a tear,'

was a happy thought. 'The Battle of La Hogue,' I have heard praised as *the best* historic picture of the British school, by one not likely to be mistaken, and who would not say what he did not feel." The gallery

of West's pictures was sold after his death for upwards of twenty-five thousand pounds sterling.

One of the most admirable traits of this great painter was his pure moral character. This is exhibited in part by the subjects upon which he chose to exercise his pencil. They were subjects of high moral interest,—heroic deeds,—events of sacred history,—the triumphs of patriotism and virtue. In this choice he persisted, too, at a time when the general taste of the country was directed to subjects of a far inferior character.

Not the least pleasant circumstance to be mentioned in this sketch of Benjamin West, is the kind relation which always existed between him and his pupils, some of whom have been among the most distinguished of American artists. It was natural that a young painter coming from America to England for instruction, or to seek his fortune, should desire the benefit of the veteran's advice and counsel. These were never sought in vain. When Trumbull was arrested, during the war, by order of the British government, West immediately waited upon the king, and made known to his majesty his pupil's character and purposes, and received the assurance that, at all events, the personal safety of the prisoner should be fully attended to. When Gilbert Stuart was in London, a young painter, without resources, West not only afforded him direct pecuniary aid, but employed him in copying, and otherwise assisted him in his study of that branch of the art in which he afterwards excelled his master. A few weeks after Allston's arrival in England, he was introduced to Mr. West, and thus speaks of him in a let-

ter :—"Mr. West, to whom I was soon introduced, received me with the greatest kindness. I shall never forget his benevolent smile when he took me by the hand ; it is still fresh in my memory, linked with the last of like kind which accompanied the last shake of his hand, when I took a final leave of him in 1818. His gallery was open to me at all times, and his advice always ready and kindly given. He was a man overflowing with the milk of human kindness. If he had enemies, I doubt if he owed them to any other cause than his rare virtue ; which, alas for human nature! is too often deemed cause sufficient."

With this genial testimony from one of the greatest and purest of our artists, himself so lately gone to his reward, we close our sketch of the earliest distinguished American painter, who, by assiduously cultivating the genius which Heaven conferred, did much to extend the reputation of his country, and to refine and bless mankind.

JOHN HUNTER.

One of the most distinguished names in the modern medical profession is that of John Hunter. He was born at Kilbride, in Scotland, July 14, 1728, the youngest of ten children. His father's family was respectable, cultivated their own small estate, and will be long remembered for having produced two men, who at the same time attained the very highest emi-

nence in the same profession; William Hunter, an elder brother of John, having been hardly less distinguished than the subject of the present notice. John, as the youngest child, was unfortunately brought up with great indulgence, and after the death of his father, which happened when he was ten years of age, exhibited the effects of it in a wayward disposition, and an aversion to anything like regular study. It is said that he was with difficulty taught the elements of reading and writing; and the attempt to teach him Latin was abandoned after a short trial, with the unsatisfactory assurance of an entire want of success. The time came, however, when his devotion to country amusements was necessarily interrupted, and he was obliged to determine what he should do for a living. His father's property was small, and the greater part of it had been given to the eldest son. John arrived at the age of nearly twenty years, without giving signs of any peculiar thoughtfulness, and with no determination as to the future. His sister had married a carpenter or cabinetmaker in Glasgow; and John, seeking employment for his hands rather than his head, became his apprentice. How long, under favourable circumstances, he would have continued to make chairs and tables, it is impossible to say; but the early failure of his master in business, threw him out of employment. Very probably he considered this a great misfortune, but it was the occasion of his subsequent distinction. Such a mind as his would not indeed, under any circumstances, have remained always harnessed to mere mechanical pursuits; but he might have toiled long before coming to understand his own

capacities, had he not been compelled to look elsewhere for the means of a daily livelihood.

Sometime before this, William Hunter, though at first destined by his family for the church, had turned his attention to medicine; and, having studied very successfully with the celebrated Dr. Cullen, had gone to London with a recommendation to Dr. James Douglass. Though early deprived of this kind friend by his death, he determined, after some discouragements and difficulties, to give instruction in anatomy and surgery. In these departments he obtained great reputation, and at the time that John was thrown out of business, was in the height of his fame. The success of the elder brother determined the younger to apply to him for assistance. His ambition was perhaps somewhat awakened to escape from the unsatisfactory life he had led. He therefore wrote to his brother, requesting permission to visit London, expressing the hope that he might render him some assistance in his anatomical pursuits, and at the same time suggesting, that if his application was unsuccessful, he might enter the army. The answer to the letter was cordial, and contained an invitation to proceed immediately to London. He accordingly set off on horseback, and arrived in the metropolis, the scene of his future most distinguished labours, in September, 1748.

The mind which had so long lain dormant, seemed now to awake. The scenes by which he was surrounded, the lectures which he heard, the conversations of his brother, and of other intelligent men, all conspired to excite his interest in a study, which he pursued until

his death, forty-five years afterwards, with ever-increasing enthusiasm and unrivalled success.

He reached London about a fortnight before his brother began his course of lectures; and Doctor Hunter, as we are informed, immediately gave him an arm to dissect so as to exhibit the muscles, at the same time instructing him how it should be done. The raw apprentice succeeeded beyond expectation. Another arm was given him to be prepared in a manner more delicate and difficult. The arteries, as well as the muscles, were to be preserved and exhibited. This was done so much to the satisfaction of Dr. Hunter, that he assured his brother of success as an anatomist, and that he should not want employment.

From this time his progress was most rapid. Mr. Cheselden, at that time extremely distinguished as a surgeon, allowed him to attend at Chelsea Hospital, during the summer of 1749; and by the next winter, he was adjudged by his brother capable of teaching anatomy. To this he devoted himself, and thus greatly relieved Dr. Hunter, whose increasing business left him very little time to attend his pupils. The next year he was equally assiduous in attendance upon the hospitals, and allowed no difficult operation to escape his notice. In 1753, he entered St. Mary's Hall, Oxford, as a gentleman commoner, though with what purpose hardly appears evident, since he did not at all relax his professional studies. During the winter of 1755, his brother admitted him to a partnership in his lectures. He devoted himself at this time, and for years subsequently, to the study of human anatomy, and not only acquired all that was previously known

of the wonderful workmanship of our bodies, but carried his researches into fields before unthought of. The preparations which he made for the uses of the lecture room and the museum, were objects of general admiration at that time, when such works were comparatively unknown. At the same time he laid the foundation of another branch of knowledge very imperfectly studied before, by the diligent pursuit of which he had "placed himself, for many years before his death, by universal acknowledgment, at the head of living anatomists, and was regarded, indeed, as having done more for surgery and physiology than any other investigator of these branches that had ever lived."

This great study has been since called *comparative anatomy*. Finding many things in the human body difficult to be understood, he began to compare the structure with that of inferior animals, where the similar parts were more simple. It was his object in this, to comprehend more thoroughly the human economy and the general laws of life. To this he was gradually led, not knowing indeed the wide fields which were opening before him, but ever pursuing his way with the greatest enthusiasm mingled with the utmost care. His time, his labour, his fortune, as fast as he acquired any, were devoted to this purpose. While his income was yet small, he purchased a piece of ground at Brompton, near London, and built a house to contain his collection. The most familiar animals were sometimes of the greatest consequence to him in his researches, but he also was anxious to obtain those which were rare. For this purpose he

purchased such foreign animals as came in his way, entrusted them to showmen to keep until they died, and, by way of compensation, received of them in return the bodies of other animals which he could not obtain when living. In this way there was a constant reciprocation of favours between himself and the keeper of the wild beasts in the Tower, and also the proprietors of other menageries in town.

By these pursuits, added to the fatigue of delivering lectures and attending to private students, his health became so much impaired that he was advised to go abroad. Accordingly, having received the appointment of surgeon on the staff, he went with the army to Bellisle, and served there and in Portugal till the close of the war in 1763. In this school he obtained his knowledge of gun-shot wounds, a subject upon which he afterwards published a treatise in connection with his remarks on the blood. On returning to London, he devoted himself again with undiminished assiduity to his former pursuits. He kept several animals of different kinds upon his premises, in order the better to observe their habits and instincts. He was sometimes put in great peril by these creatures, which were not always of the gentler kind. "Among them," says his biographer, "was a small bull which he had received from the queen, with which he used to wrestle in play, and entertain himself with its exertions in its own defence. In one of these conflicts the bull overpowered him and got him down; and, had not one of the servants accidentally come by and frightened the animal away, this frolic would probably have cost him his life." "On another occasion, two leopards, that

were kept chained in an out-house, had broken from their confinement, and got into the yard among some dogs, which they immediately attacked. The howling this produced alarmed the whole neighbourhood. Mr. Hunter ran into the yard to see what was the matter, and found one of them getting up the wall to make his escape, the other surrounded by the dogs. He immediately laid hold of them both, and carried them back to their den; but as soon as they were secured, and he had time to reflect upon the risk of his own situation, he was so much affected that he was in danger of fainting."

His time was now fully occupied. It is said by one of his eulogists, that he habitually worked twenty hours out of the twenty-four. Certainly he allowed himself but four or five hours for sleep. His house was the constant resort of students who were attracted by his fame. Some of these became afterwards much distinguished for their attainments and skill. None of them perhaps has been more widely known than Edward Jenner, the discoverer of the powers of vaccination as a preventive of the small-pox. Jenner remained during his life a friend and correspondent of Mr. Hunter; and it is not improbable, as has been suggested, that we are in a great degree indebted for that most beneficent discovery, to the "love of science, and the spirit of research, kept alive in the intelligent pupil by the precepts and example of the great master."

In February, 1767, Mr. Hunter was elected a fellow of the Royal Society. That he might turn this honour to the greatest account, he prevailed on two of the members, Dr. George Fordyce and Mr. Cummings

(an eminent watchmaker), to go with him after the regular meetings of the society, to some coffee-house, for the purpose of more extended philosophical discussion. This voluntary meeting was soon joined by other distinguished members, among whom were Sir Joseph Banks, Dr. Solander, Dr. Maskelyne (the eminent mathematician and astronomer), and Mr. Watt of Birmingham, so celebrated for his discoveries and improvements connected with the steam-engine.

During this year, he was so unfortunate as to break the great tendon which extends from the calf of the leg to the heel, and is called the *tendo Achillis*. While confined by this accident, he devoted his attention very carefully to the subject of broken tendons; so ready was he to seize upon circumstances apparently adverse, to aid him in discoveries in his favourite science.

He was married in 1771 to Miss Horne, the eldest daughter of Mr. Horne, the surgeon to Burgoyne's regiment of light horse. But, although the cares of his family increased, and his private practice as well as public duties made such continual demands upon his time, yet he devoted great attention to his already large collection. The best suite of rooms in his house was filled with his preparations; and to pursuits in connection with them, he regularly devoted the hours of every morning, from sunrise until eight o'clock, as well as other parts of the day in which he was not otherwise occupied. The facts in anatomy and physiology which he established, it would not be possible in this sketch to state; but they were such as to place him greatly in advance of his age, and to give him

undoubtedly the first rank among modern anatomists, physiologists, and surgeons.

With the extension of his reputation came the multiplication of testimonials to his learning and genius. In 1776, he was appointed Surgeon Extraordinary to his Majesty. In 1781, he was chosen Member of the Royal Society of Science and Belles Lettres at Gottenberg; and in 1783, Member of the Royal Society of Medicine and the Royal Academy of Surgery at Paris; and in 1786, was appointed deputy surgeon general to the army. We mention these circumstances simply to show the estimation in which he was held by his contemporaries; for although such testimonies are but secondary evidences of the real worth of those who receive them, yet they are deserving of no small consideration as coming from the highest scientific talent which the world possessed.

As Mr. Hunter spared no expense to make as complete as possible the collection to which he devoted so much of his time, lavishing indeed upon it and other professional pursuits nearly all his income, he fortunately felt it necessary, especially after a severe illness, in 1776, to leave it in such a state of arrangement, that his family, after his decease, should be able to dispose of it for something like its full value. He obtained, in 1783, a new and larger house than the one he had previously occupied; and erected on an adjacent lot, a large building having a room fifty-two feet long and twenty-eight wide, with a gallery all round, and lighted from the top. In this he placed his museum. His name became so celebrated in the department of comparative anatomy, that almost every new animal

brought to the country was shown to him, many were given to him, and of those that were for sale he commonly had the refusal. A young elephant had been presented to the queen ; it died, and the body was handed over to Mr. Hunter for examination. Electrical eels were brought to England from Surinam. He obtained some specimens, and published an account of them in the Philosophical Transactions. Animals as different as the whale and the honey-bee, the rhinoceros and the industrious ant, occupied his attention, as parts of the great animate kingdom, which, in some points, resembled each other. It being impossible to preserve the form and natural appearances of many of his specimens, he kept a draughtsman in his house, whose labours might be always under his eye, and whose professional skill might be entirely devoted to this one peculiar field. At the time of his death, the preparations amounted to more than ten thousand ; arranged, says one of his biographers, so as "to expose to view the gradation of nature, from the most simple state in which life is found to exist, up to the most perfect and most complex of the animal creation—man himself." The extreme beauty of these preparations is said to be apparent even to the unlearned, and "their scientific value is such as to render the collection one of the most precious of its kind in the world. It is certainly one of the most splendid monuments of labour, skill, and munificence, ever raised by one individual."

In the spring of 1786, Mr. Hunter had a severe illness, from the effects of which he seems never to have entirely recovered ; he remained subject to affec-

tions of the heart upon any occasion which excited his mind or demanded great bodily exertion. The peculiarities of his disease, which was in some respects novel and interesting, are very fully detailed by his biographer, the symptoms having been described by himself with the greatest coolness and precision. His death was very sudden, on the 16th of October, 1793. After having, in his private room, succeeded much to his satisfaction in completing a delicate preparation, he went to St. George's Hospital, according to his custom. Here something occurred which considerably irritated him. He endeavoured to repress his feelings; and going into an adjoining room, as he was turning to address one of the physicians present, he gave a groan, and dropped down dead.

Of a noble and distinguished Spanish painter it was said "he died poor and famous." Mr. Hunter was certainly famous; and if he did not die poor, he neither died rich. He left little besides his collection, which after a time was purchased by the British government for £15,000, and subsequently given, under certain conditions, to the Royal College of Surgeons of England. His public spirit constantly encroached upon his professional income; and though receiving during the later years of his life several thousand pounds a year, he had not the disposition nor the faculty to keep what he got. To the poor and distressed, he gave not only medical assistance, but, if necessary, pecuniary aid. A brief note to his brother, sent by the hands of one who had applied to him for professional advice, illustrates his character and practice: "Dear Brother,—The bearer is desirous of

having your opinion : I know nothing of his case ; he has got no money and you don't want any, so that you are well met."

To gratify his friends, he allowed a portrait of himself to be painted by Sir Joshua Reynolds. It was engraved by an artist of the name of Sharp, and the engraving has become of considerable note in the history of the art. When Lavater saw it, he said, "This man thinks for himself."

John Hunter is a memorable example of the results of genius, aided by extreme diligence and determination, and directed to one great end. The scientific value of his researches was not understood by his contemporaries : perhaps it is not too much to say, they were not fully comprehended by himself. He did not know how far he was in advance of his own generation. For particular knowledge on these points, the reader must be referred to the extended biographies of this remarkable man, and to the opinions which are coming to be more and more fully entertained and expressed by later writers on medical science. Of his efforts in one department, a recent distinguished writer has remarked, "He found surgery a mere mechanical art, hardly emancipated from its connection with the barbers; he left it a beautiful science, inferior to none in rank and interest, or in the capability of alleviating human sufferings. * * * We could well spare the writings of any surgeon excepting Hunter ; they would hardly be missed ; but if *his* researches and writings were obliterated, and their influence withdrawn, the very heart's blood of surgery would be lost.*

* Wm. Lawrence, Esq., F.R.S.

His mind was large, generous, and noble; and with the virtues, he had some of the faults of which such minds are capable. It should also be said that even his profound and original powers could never rise entirely above the misfortune of his neglected early education. He could never become a finished writer or speaker. Indeed he was so sensible of his deficiencies as a lecturer, that he is said to have habitually taken thirty drops of laudanum, before meeting his audience. This was a heavy penalty to pay to early neglect, but is not without its serious lesson to those who would trust to native genius while they disregarded its diligent cultivation. We reverence the genius of John Hunter; we should not reverence it the less and might delight in it the more, had it been freed from the clogs of an imperfect education. As it is, we pay the most willing tribute to the perseverance and effort, the singleness of purpose, and unwearied diligence, which could triumph over so many obstacles, and make such wide and noble acquisitions.

JAMES FERGUSON.

James Ferguson was born in the year 1710, a few miles from the village of Keith, in Banffshire, Scotland. His parents, as he informs us, were in the humblest condition of life (his father being merely a day labourer), honest and religious. It was his father's practice to teach his children himself to read and write, as they successively reached what he

deemed the proper age; but James was too impatient to wait till his regular turn came. While his father was teaching one of his elder brothers, James was secretly occupied in listening to what was going on; and, as soon as he was left alone, used to get hold of the book and labour diligently in endeavouring to master the lesson which he had thus gone over. Being ashamed, as he says, to let his father know in what manner he was engaged, he was accustomed to apply to an old woman, who lived in a neighbouring cottage, to solve his difficulties. In this way he actually learned to read tolerably well before his father had any suspicion that he knew his letters. His father, at last, very much to his surprise, detected him, one day, reading by himself, and thus discovered his secret. When he was about seven or eight years of age, a simple incident occurred, which seems to have given his mind its first bias to what became afterwards its favourite kind of pursuit. The roof of the cottage having partly fallen in, his father, in order to raise it again, applied a beam to it, resting on a prop in the manner of a lever, and was thus enabled, with comparative ease, to produce what seemed to his son quite a stupendous effect. This circumstance set our young philosopher thinking; and after a while it occurred to him that his father, in using the beam, had applied his strength to its extremity, and this, he immediately concluded, was an important circumstance in the matter. He proceeded to verify his notion by experiment; and having made several levers which he called bars, soon not only found that he was right in his conjecture, as to the importance of applying the moving

force at the point most distant from the fulcrum, but discovered the rule or law of the machine; namely, that the effect of any form or weight made to bear upon it, is always exactly proportioned to the distance of the point on which it rests from the fulcrum. "I then," says he, "thought that it was a great pity, that, by means of this bar, a weight could be raised but a very little way. On this, I soon imagined that by pulling round a wheel, the weight might be raised to any height, by tying a rope to the weight, and winding a rope round the axle of the wheel; and that the power gained must be just as great as the wheel was broader than the axle was thick; and found it to be exactly so, by hanging one weight to a rope put round the wheel, and another to the rope that coiled round the axle." The child had thus, it will be observed, actually discovered two of the most important elementary truths in mechanics—the lever, and the wheel and axle; he afterwards hit upon others; and, all the while, he had not only possessed neither book nor teacher to assist him, but was without any other tools than a simple turning-lathe of his father's, and a little knife wherewith to fashion his blocks and wheels, and the other contrivances which he needed for his experiments. After having made his discoveries, however, he next, he tells us, proceeded to write an account of them; thinking his little work, which contained sketches of the different machines drawn with a pen, to be the first treatise ever composed of the sort. When, some time after, a gentleman showed him the whole in a printed book, although he found that he had been anticipated in his inventions, he was much pleased, as he was well

entitled to be, on thus perceiving that his unaided genius had already carried him so far into what was acknowledged to be the region of true philosophy. Ferguson was employed in some of his early years as a keeper of sheep, in the employment of a small farmer in the neighbourhood of his native place. He was sent to this occupation, he tells us, as being of a weak body; and while his flock was feeding around him, he used to busy himself in making models of mills, spinning-wheels, &c., during the day, and in studying the stars at night, like his predecessors of Chaldea. When a little older, he went into the service of another farmer, a respectable man, called James Glashan, whose name well deserves to be remembered. After the labours of the day, young Ferguson used to go at night to the fields, with a blanket about him, and a lighted candle, and there, laying himself down on his back, pursued for long hours his observations on the heavenly bodies. "I used to stretch," says he "a thread with small beads on it, at arms-length, between my eye and the stars; sliding the beads upon it, till they hid such and such stars from my eye, in order to take their apparent distances from one another; and then laying a thread down on the paper, I marked the stars thereon by the beads. My master at first laughed at me; but when I explained my meaning to him, he encouraged me to go on; and, that I might make fair copies in the daytime of what I had done in the night, he often worked for me himself. I shall always have a respect for the memory of that man."

Having been employed by his master to carry a message to Mr. Gilchrist, the minister of Keith, he took

with him the drawings he had been making, and showed them to that gentleman. Mr. Gilchrist upon this put a map into his hands, and having supplied him with compasses, ruler, pens, ink, and paper, desired him to take it home with him, and bring back a copy of it. "For this pleasant employment," says he, "my master gave me more time than I could reasonably expect; and often took the thrashing-flail out of my hands, and worked himself, while I sat by him in the barn, busy with my compasses, ruler, and pen." Having finished his map, Ferguson carried it to Mr. Gilchrist's; and there he met Mr. Grant, of Achoynamey, who offered to take him into his house, and make his butler give him lessons. "I told Squire Grant," says he, "that I should rejoice to be at his house, as soon as the time was expired for which I was engaged with my present master. He very politely offered to put one in my place, but this I declined." When the period in question arrived, accordingly he went to Mr. Grant's, being now in his twentieth year. Here he found both a good friend and a very extraordinary man, in Cantley the butler, who had first fixed his attention, by a sun-dial, which he happened to be engaged in painting on the village school-house, as Ferguson was passing along the road, on his second visit to Mr. Gilchrist. Dialling, however, was only one of the many accomplishments of this learned butler; who, Ferguson assures us, was profoundly conversant both with arithmetic and mathematics, played on every known musical instrument except the harp, understood Latin, French, and Greek, and could also prescribe for diseases. These multifarious attainments he owed

entirely to himself and to the God of nature. From this person, Ferguson received instructions in decimal fractions and algebra, having already made himself master of vulgar arithmetic, by the assistance of books. Just as he was about, however, to begin geometry, Cantley left his place for another in the establishment of the Earl of Fife, and his pupil thereupon determined to return home to his father. Cantley, on parting with him, had made him a present of a copy of Gordon's Geographical Grammar. The book contains a description of an artificial globe, which is not, however, illustrated by any figure. Nevertheless, "from this description," says Ferguson, "I made a globe in three weeks at my father's house, having turned the ball thereof out of a piece of wood; which ball I covered with paper, and delineated a map of the world upon it; made the meridian ring and horizon of wood, covered them with paper, and graduated them; and was happy to find that by my globe, which was the first I ever saw, I could solve the problems."

For some time after this, he was very unfortunate. Finding that it would not do to remain idle at home, he engaged in the service of a miller in the neighbourhood, who, feeling, probably, that he could trust to the honesty and capacity of his servant, soon began to spend all his own time in the ale-house, and to leave poor Ferguson at home, not only with everything to do, but with very frequently nothing to eat. A little oat-meal, mixed with cold water, was often, he tells us, all he was allowed. Yet in this situation he remained a year, and then returned to his father's house, very much weaker for his want of food. His next master

was a Dr. Young, who, having induced him to enter his service by a promise to instruct him in medicine, not only broke his engagement as to this point, but used him in other respects so tyrannically, that, although engaged for half a year, he found he could not remain beyond the first quarter; at the expiration of which, accordingly, he came away without receiving any wages, having "wrought for the last fortnight," says he, "as much as possible, with one hand, and even when I could not lift the other from my side." This was in consequence of a severe hurt he had received, to which the doctor was too busy to attend, and by which he was confined to his bed two months after his return home. Reduced as he was, however, by exhaustion and actual pain, he could not be idle. "In order," says he, "to amuse myself in this low state, I made a wooden clock, the frame of which was also of wood, and it kept time pretty well. The bell on which the hammer struck the hours, was the neck of a broken bottle." A short time after this, when he had recovered his health, he gave a still more extraordinary proof of his ingenuity, and the fertility of his resources for mechanical invention, by actually constructing a time-piece, or watch, moved by a spring. "Having then," he remarks, "no idea how any time-piece could go but by a weight and a line, I wondered how a watch could go in all positions; and was sorry that I never thought of asking Mr. Cantley, who could have very easily informed me. But happening one day to see a gentleman ride by my father's house (which was close by a public road), I asked him what o'clock it then was? He looked at his watch and told me. As he

did that with so much good nature, I begged of him to show me the inside of the watch; and though he was an entire stranger, he immediately opened the watch, and put it into my hands. I saw the spring box, with part of the chain round it; and asked him what it was that made the box turn round? He told me that it was turned round by a steel spring within it. Having then never seen any other spring than that of my father's gun-locks, I asked how a spring within a box could turn the box so often round as to wind all the chain upon it? He answered that the spring was long and thin; that one end of it was fastened to the axis of the box; and the other end to the inside of the box; that the axis was fixed, and the box was loose upon it. I told him that I did not yet thoroughly understand the matter. "Well, my lad," says he, "take a long, thin piece of whalebone; hold one end of it fast between your finger and thumb, and wind it round your finger; it will then endeavour to unwind itself; and if you fix the other end of it to the inside of a small hoop, and leave it to itself, it will turn the hoop round and round, and wind up a thread tied to the outside of the hoop." I thanked the gentleman, and told him that I understood the thing very well. I then tried to make a watch with wooden wheels, and made the spring of whalebone; but found that I could not make the wheel go when the balance was put on; because the teeth of the wheels were rather too weak to bear the force of a spring sufficient to move the balance, although the wheels would run fast enough when the balance was taken off. I enclosed the whole in a wooden case, very little larger than a breakfast

tea-cup ; but a clumsy neighbour one day looking at my watch, happened to let it fall, and, turning hastily about to pick it up, set his foot upon it, and crushed it all to pieces ; which so provoked my father, that he was almost ready to beat the man, and discouraged me so much, that I never attempted to make another such machine again, especially as I was thoroughly convinced I could never make one that would be of any real use."

" What a vivid picture is this," says his biographer, in the Library of Entertaining Knowledge, " of an ingenious mind thirsting for knowledge ! and who is there, too, that does not envy the pleasure that must have been felt by the courteous and intelligent stranger by whom the young mechanician was carried over his first great difficulty, if he had ever chanced to learn how greatly his unknown questioner had profited from their brief interview ? That stranger might probably have read the above narrative, as given to the world by Ferguson, after the talents, which this little incident probably contributed to develope, had raised him from his obscurity to a distinguished place among the philosophers of his age ; and if he did not know this, he must have felt that encouragement in well-doing which a benevolent man may always gather, either from the positive effects of acts of kindness upon others, or their influence upon his own heart. Civility, charity, generosity, may sometimes meet an ill return, but *one* person must be benefitted by their exercise ; the kind heart has its own abundant reward, whatever be the gratitude or ingratitude of others. The case of Ferguson shows that the seed does not always fall on an unkindly soil."

Ferguson lived for many years in Edinburgh, engaged in drawing pictures, and in various astronomical pursuits. Among other things, he discovered by himself the cause of eclipses, and drew up a scheme for showing the motions and places of the sun and moon in the ecliptic on each day of the year, perpetually. He also made an orrery, without ever having seen the internal construction of any one. In the course of his life he made eight orreries, the last six of which were all unlike each other. Having written a proof of a new astronomical truth which had occurred to him,—namely, that the moon must move always in a path concave to the sun,—he showed his proposition and its demonstration to Mr. Folkes, the president of the Royal Society of London, who thereupon took him the same evening to the meeting of that learned body. This had the effect of bringing him immediately into notice. He soon after published his first work, "A Dissertation on the Phenomena of the Harvest Moon," with the description of a new orrery, having four wheels. It was followed by various other publications, most of which became very popular. In 1748, he began to give public lectures. Among his occasional auditors was George III., then a boy. In 1763, he was elected a Fellow of the Royal Society, the usual fees being remitted, as had been done in the cases of Newton and Thomas Simpson. He died in 1776, having acquired a distinguished reputation both at home and abroad.

JAMES WATT.

The present age is remarkable for the number and value of its mechanical inventions. There never was a time when the energies of nature were so entirely under the control of man. Agents which, a hundred years since, no one thought of employing, are now our mightiest, most docile, most constant servitors. The vapour, which our grandfathers watched, rushing from the tea-kettle, and thought of only as an indication of the boiling water within, we collect, and compel it to bear us over "iron-highways, in wains fire-winged," to transport us thousands of miles, over the waste of waters, to turn for us massive machinery, to perform the labour of ten thousand hands. The electricity which we once gazed upon with wonder and awe, as it flashed from cloud to cloud, or played with for our amusement in the laboratory, has become our swiftest, most obedient messenger.

Among the most distinguished of those who, by their science and skill, have taught us how to tame and to use the unwearied forces of the elements, stands the name of James Watt. He was born in Greenock, Scotland, January 19, 1736. His father, an ingenious and enterprising man, was a merchant and magistrate of the town, and "a zealous promoter of improvements." He died in 1782, when nearly eighty-four years old. In the public schools of his native town, young Watt received the rudiments of his education; but the delicacy of his constitution was such,

that he attended the classes with difficulty. He was, however, very studious at home, and began early to exhibit a partiality for mechanical contrivances. When he was sixteen years old, he was apprenticed to an optician, as he was called,—a person who was "by turns a cutler and a whitesmith, a repairer of fiddles, and a tuner of spinnets." With him he remained two years. In his eighteenth year he went to London, to place himself under the tuition of a mathematical instrument maker. His health, however, becoming impaired, he was obliged to leave the metropolis in a little more than a twelvemonth; but he continued, after his return home, to perfect himself in the art, in which he manifested great proficiency. He soon visited Glasgow, with the desire of establishing himself there, but met with opposition from some who considered him an intruder upon their privileges. Under these circumstances, the professors of the college, appreciating his fine tact and ingenuity, afforded him protection, and gave him an apartment for carrying on his business within their precincts, with the title of "*Mathematical Instrument Maker to the University.*"

There were at this time connected with the University, Adam Smith, Robert Simpson, Dr. Black, and Dr. Dick, whose approbation alone would be sufficient to show that the young artisan had already given decided proofs of skill. He was at this time twenty-one years of age, and remained in connection with the college six years, until 1763, when he removed into the town.

About the year 1761 or 1762, he began his inquiries respecting the steam-engine; and the idea suggested

itself of the possibility of applying steam with greater advantage than formerly to the moving of machinery. A small model was constructed, in which an upright piston was raised by admitting steam below it, and forced down again by the pressure of the atmosphere. This contrivance he soon abandoned, and the pressure of business prevented him from immediately resuming his investigation.

As much of Mr. Watt's fame depends upon his labours in connection with the steam-engine, we shall in this place give a connected and somewhat particular account of his improvements, rather than break up the narrative by mentioning other events of his life, which for a time interrupted his experiments. The utility of steam, as a moving power, depends upon its immense expansive force, in connection with the property of immense and sudden contraction by condensation. A cubic *inch* of water, at the ordinary pressure of the atmosphere, will make a cubic *foot* of steam. Water above a certain temperature (at the ordinary atmospheric pressure, 212 degrees, Fahrenheit) will become steam; and, on the contrary, steam below a certain temperature will become water. If, then, a cubic inch of water be heated above 212 degrees, a portion of it will at once expand to about 1,800 times its former dimensions. But steam, by being confined, may be made to exert this great expansive force to the movement of machinery. On the other hand, 1,800 cubic inches of steam, by being suddenly cooled, contracts so as to fill but one cubic inch in the form of water. Hence, if a tight vessel, say a cylinder, filled with steam, were suddenly cooled, a partial vacuum would

be immediately formed by condensation; and, if one end of the cylinder were moveable, the pressure of the atmosphere would force it in. The introduction of steam again, would force the moveable head of the cylinder back, and thus a motion backwards and forwards could be obtained. This was, in fact, nearly the earliest form of the steam-engine. To the moveable head of the cylinder a rod was attached, and this was connected with a lever which moved certain pieces of machinery.

The properties of steam, on which its utility as a moving agent depends, were known to a certain extent for centuries before any one thought of applying them. This, indeed, is the history of almost every useful art. A discovery which, after it is known, seems so simple that every body wonders *he* did not see it, remains hid for thousands of years, but at last proves great enough to immortalize the fortunate inventor. How stupid men were, to toil in copying books with the pen for centuries, when, by the aid of blocks of wood or bits of lead, they could have so immensely diminished the labour! In the seventeenth century, attention was frequently directed by ingenious artists to the uses of steam in performing simple but laborious occupations, such as pumping water. At the time when Mr. Watt commenced his labours on the subject, a machine was in use, invented by Thomas Newcomen, an ingenious mechanic.—The object of the steam, according to his contrivance, was simply to create a vacuum, into which the atmospheric pressure could force a piston (to be raised again by a counterpoise), and thus apply a moving power, of about fourteen

pounds to the square inch. In practice, it was found that the power applied was much less than this, on account of the vacuum being imperfectly formed. The steam in the cylinder was at first condensed by cooling the cylinder itself with cold water. It was afterwards accidentally discovered, that the same could be better accomplished by injecting a stream of cold water *into* the cylinder.

It was still a very imperfect machine. Great care and watchfulness were necessary on the part of the attendant in opening the different valves, which he was obliged to do fourteen times *a minute*, or risk the destruction of the apparatus. When he opened the steam valve, he was obliged to watch the ascent of the piston, and at the moment of its reaching the proper height, close the valve and instantly open the injection pipe. When this cooled the steam sufficiently, and the piston began to descend, the steam must be let in again at a particular moment; or the heavy piston, forced down by the atmosphere with too great rapidity, would shake the apparatus to pieces. One of the first contrivances to dispense with this constant watchfulness of the attendant, resulted from the ingenuity of an idle boy, Humphrey Potter. He added to the machine (what he called a *scoggan*) "a catch, that the beam or lever always opened. To *scog* is a verb, found in certain vocabularies in the north of England, implying to skulk; and this young gentleman, impelled by a love of idleness or play common to boyhood, and having his wits about him, after due meditation, devised this contrivance, by which so important an improvement was effected, and himself allowed the means

of 'scogging' for his own diversion." The *importance* of the discovery may be seen in the fact, that, while before, the piston would make but six or eight strokes a minute, afterwards it would make fifteen or sixteen. Without dwelling longer upon the history of the steam-engine, we will return to the life of Watt.

In the winter of 1763–4, the Professor of Natural Philosophy at Glasgow put into Mr. Watt's hands a model of an engine upon Newcomen's plan, to be repaired. While at work upon this model, he perceived the immense loss of steam from condensation, caused by the cold surface of the cylinder. He determined, by experiment, that this loss was "not less than three or four times as much as would fill the cylinder and work the engine." In the operation of the engine there was also a great waste of heat. The cylinder was at one moment heated so that he could not bear his finger upon it, and must then be cooled so as to condense the steam; and this alternate heating and cooling took place at every stroke of the piston. In the course of these experiments, he became acquainted with the theory of latent heat, which had been previously expounded by Dr. Black, but of which he had not heard.

The materials with which he performed his experiments were of the cheapest kinds. Apothecaries' vials, a glass tube or two, and a tea-kettle, enabled him to arrive at some very important conclusions. By attaching a glass tube to the nose of a tea-kettle, he conducted the steam into a glass of water, and, by the time the water came to the boiling temperature, he found its volume had increased nearly a sixth part;

i. e., "that one measure of water, in the form of steam, can raise about six measures of water to its own heat." In the words of Dr. Ure, that "a cubic inch of water would form a cubic foot of ordinary steam, or 1,728 inches; and that the condensation of that quantity of steam would heat six cubic inches of water from the atmospheric temperature to the boiling point. Hence, he saw that six times the difference of temperature, or fully 800 degrees of heat, hasbeen employed in giving elasticity to steam, and which must all be subtracted before a complete vacuum could be obtained under the piston of a steam-engine."

To remedy this evil, he first substituted a wooden cylinder for a metal one; so that the heat might be transmitted more slowly. This, however, was liable to many other objections; and he then cased his cylinders in wood, and filled the space between them with ashes. By this means, he reduced the waste one half. Still he felt it to be of great consequence to condense the steam without cooling the cylinder; and early in the year 1765, it occurred to him, "that, if a communication were opened between a cylinder containing steam, and another vessel which was exhausted of air and other fluids, the steam, as an expansible fluid, would immediately rush into the empty vessel, and continue to do so until it had established an equilibrium; and that, if the vessel were kept very cool by an injection or otherwise, more steam would continue to enter until the whole were condensed." This was an immense advance; since, by condensing the steam in a separate vessel, the main cylinder could be preserved at the same temperature. There was soon perceived, how-

ever, another hindrance to this. Thus far, the cylinder was open at the top, and when the piston was raised by steam, it was pressed down again by the weight of the atmosphere. Hence, as the cold air was admitted on the descent of the piston, the sides of the cylinder were necessarily cooled. It then occurred to Mr. Watt, to make the cylinder air-tight, simply leaving a hole for the passage of the piston rod, around which oakum could be packed so tight as to prevent the escape of steam, and then to dispense with the air entirely in the working of the machine, and to press the piston down as well as up, by means of steam. This proved to be another great improvement, by introducing a force which could be precisely controlled, doing away with the old system of counterpoises, and giving the engine a *double-acting* power. Mr. Watt soon found by experiment, that he had not overcome all the impediments in the way of perfect success. The vessel in which the condensation was effected,—the condenser,—became soon surcharged with water, with uncondensed steam, and partly with atmospheric air contained in the water, and set free from it by great heat. To remedy this, his genius contrived to apply a pump (since called the air-pump), so that, at every stroke of the engine, the condenser might be freed from whatever it contained. This pump was connected with the engine itself, and worked by it.

We have not the space to describe particularly the minor improvements which were afterwards introduced by Mr. Watt (among which was the application of the *governor*, or regulator), but the *expansion* engine, as he called it, is an improvement so great that it cannot

be overlooked. According to the old plan, the steam was admitted continuously, at one end of the cylinder, until the piston was entirely raised, and then again at the other end, until it was entirely depressed. Upon this plan, it was found necessary to proportion the work to be performed very exactly to the power which was generated ; since, if the power greatly exceeded the weight to be raised, it would occasion so rapid a motion, that no machinery could withstand the jolts and shocks. Much damage was thus done, and much expense incurred. This was no slight drawback to the general utility of the machine. This difficulty, too, was effectually remedied. Steam in the boiler is greatly condensed. It occurred then to Mr. Watt, that, if the steam were shut off after the piston had been pressed down for a certain proportion of its total descent—say one half, one third, or one quarter—the expansive force of the steam already introduced would be sufficient to accomplish the rest of the descent. This was found to be the case ; and by adjusting the rods of the machinery, the valve could be closed at any moment, and the acting force brought completely under the power of man. By this means, not only is the steam greatly economized, but is made to work as gently as the most docile animal. The jar in the machinery is taken away ; and an engine, with the power of three hundred horses, may be at full work, and the tremor hardly be perceived.

Another important discovery resulted from these attempts of Mr. Watt to economize steam, and to save the machinery. We will state it in the words of a recent writer :—" He found that steam, admitted into

the cylinder to one fourth of its depth, and exerting a pressure amounting to 6,333 pounds, when allowed to expand into the whole capacity of the cylinder, added a pressure of 8,781 pounds; and moreover, that had the cylinder been filled with steam of the same force, and exerting the accumulated pressure of (6,333×4) 25,332 pounds, the steam expended in that case would have been four times greater than when it was stopped at one fourth; and yet accumulated pressure was not twice as great, being nearly five thirds. One fourth of the steam performs nearly three fifths of the work, and an equal quantity performs more than twice as much work when thus admitted during one fourth of the motion; *i. e.*, instead of 6,333 pounds, exerts an accumulated force of 15,114 pounds." It is hardly necessary to say that these figures represent the pressure as found in a particular experiment. The *proportions*, it is presumed, will be found nearly true under all circumstances.

We have thus mentioned some of the principal improvements effected in the steam engine, by the ingenuity of Mr. Watt. They are so great, and in fact essential, as to throw all other improvements into the shade. They, indeed, created the modern steam-engine. Mr. Watt, perhaps, did not dream of the extensive applications to which this power could be put. It may be that we ourselves have but half developed its capabilities. Steam was used for many years on land, before it was applied with any success to the propelling of boats. It was employed on boats long before brought into service in moving land carriages. Only a few years ago, a learned man de-

monstrated, as he thought, the absolute impracticability of propelling a ship, by means of it, across the Atlantic. But now you hear the panting of the mighty monster on every sea and ocean. It rounds the southern capes; circumnavigates the world. Manufactures, the most delicate and the most ponderous, are indebted to its obedient ministrations; it performs processes the most complicated as well as the most simple; it weaves the most delicate tissue; it breaks asunder the strongest bars of iron; it stretches out its iron fingers, ceizes the sheet of paper, and, in a moment, delivers it back to you a printed book; it raises the huge block of stone to the top of the monument or the fortification; it turns out the irregular shaped last and gun-stock. He is a bold prophet who shall foretell a limit to the application of an agent so mighty and so docile.

These improvements were not made by Mr. Watt without trouble and expense. His reputation was strongly attacked; his originality denied; his right to various patents vehemently contested. He was many times disappointed in the working of his own contrivances, and was obliged to throw away many pieces of machinery, from which he expected much. And, after all, he left abundant opportunities for the exercise of ingenuity by future engineers. In fact, his discoveries furnished materials for the many improvements which have been effected since his time. As a proof of the slight use which had been made of steam-engines before his time, and of the prejudices and sluggishness against which his invention had to contend, it is stated that the sum of very nearly L.50,000 was expended by Watt and Bolton (his partner) in the manufac-

ture of the improved engines, before they realized any return.

It must not be supposed that these improvements of Mr. Watt were made continuously, as they have been described. He was often interrupted by want of means to exhibit his machine on an adequate scale, and also by engaging, from time to time, in other occupations. He did not confine himself to improvements of the steam-engine. Although self-taught, he acquired considerable reputation as a civil engineer. In 1767, he was employed to make a survey for a canal between the rivers Forth and Clyde. The bill necessary for its execution was lost in parliament. A canal from the Monkland collieries to Glasgow was then intrusted to his superintendence, after he had already made the necessary surveys and prepared the estimates. The Trustees for Fisheries and Manufactures in Scotland soon employed him to survey a projected canal from Perth to Forfar. This again was succeeded by a survey of the Crinan Canal, to connect the Firth of Clyde and the Western Ocean. This canal was afterwards executed by his friend, Mr. Rennie, who became distinguished as one of the best engineers in England. Business of this kind now crowded upon him. He was called upon to furnish plans for deepening the river Clyde; for rendering the rivers Forth and Devon navigable; for improving the harbours of Ayr, Port-Glasgow, and Greenock; and for building several important bridges. The last and greatest work of this sort, upon which he was engaged, was surveying the line of a projected canal between Fort William and Inverness. This was afterwards executed on a larger

scale than was at first proposed, under the name of the Caledonian Canal. It was during the execution of some of these works, that he invented an ingenious micrometer, for measuring distances (such as the breadth of arms of the sea) which could not be measured by the chain. It was found to be of great value in ascertaining the distance between hills, and, on uneven ground, proved to be more accurate than the chain.

In the course of his pursuits as a surveyor, Mr. Watt became acquainted with Dr. Roebuck, an English physician, who was at this time acquiring a fortune by the manufacture of sulphuric acid. Dr. Roebuck had a short time before completed his establishment of the Carron Iron-works,* and Mr. Watt formed a partnership with him, for the sake of the pecuniary aid he could afford in constructing the improved engines on a large scale; retaining, as his own share of the profits, one third of the proceeds from the invention. In his expectations he was, however, disappointed, partly from entering so largely into engagements as an engineer, some of which we have already referred to, and partly from the pecuniary difficulties in which his partner became involved. He had, indeed, nearly given up the hope of accomplishing his schemes, when Mr. Matthew Bolton, an engineer of some eminence and considerable wealth, living near Birmingham, purchased Dr. Roebuck's share of the patent. The partnership between Watt and Bolton was formed in 1773, and Mr. Watt removed to England.

* The kind of ordnance called *a Carronade* received its name from having been first manufactured at Carron, a village twenty-six miles north-east from Edinburgh.

Although common fame cherishes the name of Watt mainly as the perfecter of the steam-engine, yet he did not confine his inventions to this alone. Feeling the necessity of preserving accurate copies of his drawings and of letters containing calculations, he invented a copying apparatus. In its simplest form it is merely a press, by means of which, a thin sheet of unsized paper, rendered slightly wet, is strongly pressed upon the letter to be copied, which has been written in a strong character, with ink which is soluble in water. The impression is then read on the opposite side from that on which it is taken.

In 1781, he contrived a steam-drying apparatus, for a relation living near Glasgow. In 1784–5, he put up an apparatus for heating his study by means of steam, a method which is now frequently used in manufactories, in conservatories and hot-houses, and, sometimes, as we have known, in steam boats. While most busily occupied with the steam-engine, he found time to engage in chemical studies. The constituent elements of water attracted his attention, on account of some experiments of Dr. Priestley; and, in April 1784, he communicated to the Royal Society, a paper, entitled, "Thoughts on the constituent parts of water and of dephlogisticated air, with an account of some experiments upon that subject"

The winter of 1786–7, Mr. Watt spent at Paris; having been invited to France by the government for the purpose of suggesting improvements in the manner of raising water at Marly, that being the place from which the splendid water-works at Versailles draw their supply. During this temporary residence, he

became acquainted with Mr. Berthollet, one of the most distinguished chemists of his time. The art of bleaching by means of oxymuriatic acid had just been discovered by him. He communicated the invention to Mr. Watt, who, seeing at once the wide use that might be made of it, advised him to take out an English patent. This, Mr. Berthollet declined doing, and left Mr. Watt to make such use of the invention as he pleased. Accordingly he introduced it into the bleaching field of his father-in-law, Mr. M'Gregor, and gave directions for the construction of the necessary vessels and machinery. At his first attempt, he bleached five hundred pieces of cloth.

From 1792 to 1799, the firm of Bolton and Watt was much occupied in defending their patent rights against numerous invaders. The dues which they claimed were one-third of the savings of fuel, compared with the best engines previously in use. Several verdicts were given in their favour, up to 1799, when a unanimous decision of all the judges of the Court of King's Bench established the validity of their claims to novel and useful inventions.

In 1800, Mr. Watt withdrew from business; giving up his shares to his two sons, of whom the youngest, Mr. Gregory Watt, died soon after.

Although thus removed from immediate connection with business, his interest in his former pursuits did not desert him. He maintained a warm friendship with his old associate, Mr. Bolton, to the close of his life. One of his later inventions was a machine for copying all kinds of statuary. His taste for sculpture had been cultivated by a series of experiments in mak-

ing a composition having the transparency and nearly the hardness of marble, from which he made many casts.

In 1809, from grateful remembrances of his early residence in Glasgow, he lent his assistance to the proprietors of the water-works, in their attempt to supply the city with pure water. The city is built upon the right bank of the Clyde. It was proposed to sink a well on the *left* bank of the river, where the sand affords a natural filter for the water. The problem was, to convey the water across the river. Mr. Watt suggested a flexible pipe, which was found to succeed completely. Another pipe was afterwards laid, in order to increase the supply. The idea of the flexible joint was suggested, as he himself said, by observing the flexibility of the lobster's tail.

Although we have confined our sketch of Mr. Watt mainly to his mechanical skill, it would not be just to close our account of him here. There was hardly a physical science or an art with which he was not pretty intimately acquainted. His philosophical judgment kept pace with his ingenuity. He studied modern languages, and was acquainted with literature. His memory was extremely tenacious; and whatever he once learned, he always had at his command. We should also remember that his health was never firm. He accomplished his great labours in spite of a constitutional debility, increased by anxiety and perplexity, during the long process of his inventions, and the subsequent care of defending them. He was frequently attacked by sick headaches of great severity, which seem to have arisen from a defect of the digestive

organs. Nothing preserved his life but constant temperance and watchfulness of his peculiar difficulties. Notwithstanding his infirmities, he attained the great age of eighty-three, and died after a short illness, in the midst of his family, at Heathfield, August 25, 1819.

He did not live without the testimony of learned bodies of men to his great attainments. In 1784, he was elected a Fellow of the Royal Society of Edinburgh; in 1785, a Member of the Royal Society of London; in 1787, a Corresponding Member of the Batavian Society; in 1806, he received from Glasgow the degree of Doctor of Laws; and in 1808, he was elected, first, a Corresponding Member, and afterwards an Associate, of the Institute of France.

His remains were deposited in the chancel of the parochial church of Handsworth, near those of his former associate, Mr. Bolton. An excellent bust of him was made by Mr. Chantry, before his death; and a statue was subsequently completed by the same distinguished artist, intended to be placed upon his tomb.

We shall close this sketch, by a few extracts from an eloquent eulogy, written soon after his death, by Lord Jeffrey, and published in the journals of the time:—

"It is with pain that we find ourselves called upon, so soon after the loss of Mr. Playfair, to record the decease of another of our illustrious countrymen, and one to whom mankind has been still more largely indebted—Mr. James Watt, the great improver of the steam-engine. This name, fortunately, needs no commemoration of ours; for he that bore it survived to see it crowned with undisputed and unenvied honours, and

many generations will probably pass away before it shall have 'gathered all its fame.' We have said that Mr. Watt was the great *improver* of the steam-engine; but, in truth, as to all that is admirable in its structure, or vast in its utility, he should rather be described as its *inventor*. It was by his inventions, that its action was so regulated as to make it capable of being applied to the finest and most delicate manufactures, and its power so increased as to set weight and solidity at defiance. By his admirable contrivances, it has become a thing stupendous alike for its force and its flexibility,—for the prodigious power which it can exert, and the ease, and precision, and ductility, with which it can be varied, distributed, and applied. The trunk of an elephant that can pick up a pin or rend an oak is as nothing to it. It can engrave a seal, and crush masses of obdurate metal like wax before it,—draw out, without breaking, a thread as fine as gossamer, and lift a ship of war like a bauble in the air. It can embroider muslin, and forge anchors,—cut steel into ribands, and impel loaded vessels against the fury of the winds and waves.

"It would be difficult to estimate the value of the benefits which these inventions have conferred upon the country. There is no branch of industry that has not been indebted to them; and in all the most material, they have not only widened most magnificently the field of its exertions, but multiplied a thousandfold the amount of its productions. * * * It has increased indefinitely the mass of human comforts and enjoyments, and rendered cheap and accessible all over the world, the materials of wealth and prosperity. It

has armed the feeble hand of man, in short, with a power to which no limit can be assigned; completed the dominion of mind over the most refractory qualities of matter; and laid a sure foundation for all those future miracles of mechanical power which are to aid and reward the labours of after generations. It is to the genius of one man, too, that all this is mainly owing; and certainly, no man ever before bestowed such a gift on his kind. The blessing is not only universal, but unbounded; and the fabled inventors of the plough and the loom, who were deified by the erring gratitude of their rude contemporaries, conferred less important benefits on mankind, than the inventor of our present steam-engine. * * * *

"Independently of his great attainments in mechanics, Mr. Watt was an extraordinary, and, in many respects, a wonderful man. Perhaps no individual in his age possessed so much, and such varied and exact information,—had read so much, or remembered what he had read so accurately and well. He had infinite quickness of apprehension, a prodigious memory, and a certain rectifying and methodizing power of understanding, which extracted something precious out of all that was presented to it. His stores of miscellaneous knowledge were immense, and yet less astonishing than the command he had at all times over them. * * * * That he should have been minutely and extensively skilled in chemistry and the arts, and in most branches of physical science, might perhaps have been conjectured; but it could not have been inferred from his usual occupations, and probably is not generally known, that he was curiously learned in many

branches of antiquity, metaphysics, medicine, and etymology, and perfectly at home in all the details of architecture, music, and law. He was well acquainted, too, with most of the modern languages, and familiar with their most recent literature.

"His astonishing memory was aided, no doubt, in great measure, by a still higher and rarer faculty—by his power of digesting and arranging in its proper place all the information he received, and of casting aside and rejecting, as it were instinctively, whatever was worthless or immaterial. * * * It is needless to say, that, with these vast resources, his conversation was at all times rich and instructive in no ordinary degree; but it was, if possible, still more pleasing than wise, and had all the charms of familiarity, with all the substantial treasures of knowledge. No man could be more social in his spirit, less assuming or fastidious in his manners, or more kind and indulgent towards all who approached him. * * * His talk, too, though overflowing with information, had no resemblance to lecturing or solemn discoursing; but, on the contrary, was full of colloquial spirit and pleasantry. He had a certain quiet and grave humour, which ran through most of his conversation; and a vein of temperate jocularity, which gave infinite zest and effect to the condensed and inexhaustible information which formed its main staple and characteristic. * * * He had in his character the utmost abhorrence for all sorts of forwardness, parade, and pretension; and, indeed, never failed to put all such impostors out of countenance, by the manly plainness and honest intrepidity of his language and deportment.

"In his temper and disposition he was not only kind and affectionate, but generous, and considerate of the feelings of all around him; and gave the most liberal assistance and encouragement to all young persons who showed any indications of talent, or applied to him for patronage or advice. * * * His friends, in this part of the country, never saw him more full of intellectual vigour and colloquial animation,—never more delightful or more instructive, than in his last visit to Scotland, in autumn, 1817. Indeed, it was after that time that he applied himself, with all the ardour of early life, to the invention of a machine for mechanically copying all sorts of sculpture and statuary, and distributed among his friends some of its earliest performances, as the production of a young artist, just entering on his 83d year.

"This happy and useful life came at last to a gentle close. He had suffered some inconvenience through the summer, but was not seriously indisposed till within a few weeks from his death. He then became perfectly aware of the event which was approaching; and, with his usual tranquillity and benevolence of nature, seemed only anxious to point out to the friends around him, the many sources of consolation which were afforded by the circumstances in which it was about to take place. * * * He was twice married, but has left no issue but one son, long associated with him in his business and studies, and two grand-children by a daughter who predeceased him.

* * All men of learning and science were his cordial friends; and such was the influence of his mild character and perfect fairness and liberality, even

upon the pretenders to these accomplishments, that he lived to disarm even envy itself, and died, we verily believe, without a single enemy."

ALEXANDER WILSON.

Alexander Wilson, the Ornithologist, was born in Paisley, Scotland, about the year 1766. He was early apprenticed to a weaver, but while in this employment, manifested a strong desire for learning, and spent his leisure hours in reading and writing. After being released from this occupation, he, for a time, became a pedler, and, with a pack on his back, wandered among the beautiful valleys and over the mountains of Scotland. Seldom has one of that acute and insinuating craft thought so little of trafficking as he did. His feelings were those of joy and almost rapture at the beauties of nature, and the entire freedom with which he could enjoy them. "These are pleasures," he says with enthusiasm, "which the grovelling sons of interest, and the grubs of this world, know as little of, as the miserable spirits, doomed to everlasting darkness, know of the glorious regions and eternal delights of Paradise." Here was a pedler indeed! This wandering life cultivated those tastes which were afterward so strongly and so happily developed in America. He became dissatisfied with trading, in proportion as he became in love with nature; and, although he still pursued his business to obtain a livelihood, he indulged his taste for poetry, and contributed

several essays to various periodical publications. In a debating society with which he became connected, he gained considerable applause by poetical discourses. Subsequently he collected his verses and published them, with the hope of receiving some pecuniary advantage. The poems went through two small editions, but the author gained no benefit from the publication. In 1792, he published another story in verse, entitled Watty and Meg, which, being printed anonymously, was at first ascribed to Burns, and has ever retained its popularity in Scotland, as among the best productions of the Scottish muse.

About the same time occurred a circumstance which probably hastened his emigration to America. He published a severe satire upon one of the wealthy manufacturers, who had rendered himself obnoxious by certain unpopular acts. The satire was not so much relished by the subject of it as by the workmen. Legal measures were resorted to. The author was discovered and prosecuted for a libel, and "sentenced to a short imprisonment, and to burn, with his own hands, the piece, at the public cross in the town of Paisley." It is said that the poet, in whose mind was no vindictiveness of spirit, did not think of his satire, in after life, with feelings of satisfaction.

Before he left Paisley, indeed, his generous feelings got the mastery of all other; and he asked the forgiveness of some who had felt the bitterness of his pen, for any uneasiness which he had caused them. Sometime afterward, his brother David went to America, and took with him a collection of these pieces; but Alexander no sooner got them into his hands, than

he threw them into the fire. "These," said he, "were the sins of my youth ; and if I had taken my good old father's advice, they would never have seen the light."

Not long after the events thus referred to, he determined to go to America, and, by great industry and economy, at last gained sufficient funds to accomplish his purpose. A ship was to sail from Belfast, in Ireland. He left Paisley on foot, and at Port Patrick took passage for Belfast. On his arrival he found the ship full. Undaunted, however, and determined not to return to Scotland, he consented to sleep upon deck, and accordingly embarked in the ship *Swift*, of New York, bound to Philadelphia, and landed at Newcastle, Delaware, July 14, 1794, in the 28th year of his age. He had but a few shillings in his pocket, but he was buoyant with hope ; he had actually set foot upon the new world, and shouldering his fowling-piece, he directed his steps towards Philadelphia, distant about thirty-three miles. On his way, he shot a red-headed woodpecker, which he thought "the most beautiful bird he had ever beheld."

For some time after his arrival in America, he seems to have doubted to what employment he should devote himself. We find him within a year engaged as a copper-plate printer ; then as a weaver ; then moving to Shepherdstown, Virginia, and soon returning to Pennsylvania ; then travelling in New Jersey, as a pedler ; then opening a school, near Frankford, Pennsylvania ; and soon removing to Milestown, where he remained for several years, both teaching and making himself master of those branches of learning with which he was not before acquainted

After several other changes, Wilson at last found himself situated in a school, on the banks of the Schuylkill, within four miles of Philadelphia, and near the botanical garden of the philosopher and naturalist, William Bartram.

This was the beginning of a new life to the future ornithologist. He formed an acquaintance with Mr. Bartram, which soon ripened into a permanent friendship. Wilson had always been observant of the manners of birds, but had never studied them as a naturalist. Mr. Bartram lent him the works of Catesby and Edwards on natural history, from which he derived much instruction, even while his own knowledge enabled him to correct many of their errors. Notwithstanding his progress in information, and his general prosperity, he was subject at times to great despondency. His sensitive mind could not bear the prospect of a life of penury and dependence ; to which, as the teacher of a country school, he seemed destined.

During some of these periods of depression, Mr. Lawson, an acquaintance of Mr. Bartram, and afterward the principal engraver of the plates for the Ornithology, suggested to Wilson the employment of drawing. He consented, but succeeded so poorly in attempting to copy the human figure, that he threw his work aside in despair. At the suggestion of Mr. Bartram, he then tried his hand at flowers, and felt somewhat encouraged. Colours were obtained, and he painted from nature a bird which he had shot. His success aroused all his energies : he was evidently approaching the true objects of his life, those which his

tastes fitted him for, and to which his powers were adapted.

In the meantime, as he improved in drawing, he advanced in a knowledge of ornithology ; nor was it long before the thought suggested itself that it would not be an unworthy employment to make known to others the beauties and wonders of his favourite science.

He accordingly asked the advice of Mr. Bartram, who, while he acknowledged the abilities of Wilson, suggested also the difficulties attendant upon the undertaking. The future ornithologist was not, however, deterred by them ; his ingenuity was ready with an answer to all objections, or his enthusiasm disregarded them. Under date of March 12, 1804, he thus writes to his friend Lawson : "I dare say you begin to think me very ungenerous and unfriendly in not seeing you for so long a time. I will simply state the cause, and I know you will excuse me. Six days in one week I have no more time than just to swallow my meals, and return to my *sanctum sanctorum*. Five days of the following week are occupied in the same routine of pedagoguing matters; and the other two are sacrificed to that itch for drawing which I caught from your honourable self. I never was more wishful to spend an afternoon with you. In three weeks I shall have a few days' vacancy, and mean to be in town chief part of the time. I am most earnestly bent on pursuing my plan of making a collection of all the birds in this part of North America. Now I don't want you to throw cold water, as Shakspeare says, on this notion, Quixotic as it may appear. I have been so long accustomed to

the building of airy-castles and brain wind-mills, that it has become one of my earthly comforts—a sort of rough bone, that amuses me when sated with the dull drudgery of life."

In the latter part of this year, he undertook a pedestrian journey to the Niagara Falls, in company with two friends. Winter came upon them on their return, in Genessee county; one of his companions stopped with some friends, and the other sought a pleasanter mode of travelling. Wilson persevered, and, after fifty-seven days' absence, reached home the 7th of December, having walked more than twelve hundred miles. "The last day he walked forty-seven miles." One result of this excursion was a poem, entitled *The Foresters*, which was published in the *Portfolio*.

The toils of the journey only increased his ardour to undertake some more extensive expedition. He was in love with the woods, and the wild pleasures of a forester's life. His constitution was hardy; he had no family to bind him to one spot, and his whole circumstances tended to encourage his predominant taste. But, while thus forming large plans, his means for accomplishing them remained very small. "The sum total of his funds amounted to *seventy-five cents*." He continued, however, to make drawings of birds, which he submitted to Mr. Bartram's criticism. He also began to try his hand upon the corresponding art of etching, since it was certain that the plates in his projected Ornithology must be either etched or engraved. Mr. Lawson furnished him with materials, and with customary enthusiasm the new artist applied his varnish, and commenced the operation. "The next day

after Mr. Wilson had parted from his preceptor, the latter, to use his own words, was surprised to behold him *bouncing* into his room, crying out, '*I have finished my plate! Let us bite it in with the aquafortis at once, for I must have a proof before I leave town.*' Lawson burst into laughter at the ludicrous appearance of his friend, animated with impetuous zeal; and, to humour him, granted his request. The proof was taken, but fell far short of Mr. Wilson's expectations, or of his ideas of correctness."

His succeeding attempts at etching did not prove very satisfactory to himself; and they convinced him, besides, that to meet the demands of his taste, the plates must be finished by the engraver. He then endeavoured to induce Mr. Lawson to undertake the work jointly with himself, a proposition which that artist thought best to decline. Wilson did not falter in his purpose, on account of these disappointments, but declared his determination to persist in the publication, even if it cost him his life. "I shall at least," he said, "leave a small beacon to point out where I perished."

About the beginning of the year 1806, the hopes of our ornithologist were greatly raised by the public announcement that it was the purpose of the President of the United States to despatch a company of men for exploring the waters of Louisiana. Mr. Wilson was inspired with the thought that here he might have an opportunity, long ardently desired, of visiting those regions, and making the necessary researches for his Ornithology. He accordingly made an application to Mr. Jefferson, stating his purpose, and offering his

services. The whole was enclosed in an introductory letter from Mr. Bartram. The application was unsuccessful: Mr. Jefferson did not make any reply at all. The wishes of the ornithologist were, however, nearer their gratification than he supposed.

Mr. S. F. Bradford, of Philadelphia, whose name deserves honourable mention, being about to publish an edition of Rees's Cyclopedia, engaged Wilson, on the recommendation of some of his friends, as assistant editor, offering him a liberal salary. It was not long before he also engaged to publish the Ornithology. It was a happy day for the frequently baffled, but not disheartened naturalist, when the bargain was made, and his friend Lawson secured as the engraver.

In September 1808, he published the first volume of the *American Ornithology*. Notwithstanding the previous announcement, it was received by the public with great surprise and unqualified delight. It was considered a national honour, that a scientific work, so splendid in the style of its illustrations, could be produced in so young a country. Mr. Wilson immediately started with the volume in his hand to obtain subscribers in the Northern and Eastern States; at the same time he constantly kept his eye open to gain all possible information for the continuation of the work. "I am fixing my correspondents," he writes in a letter from Boston, "in every corner of these northern regions, like so many pickets and outposts, so that scarcely a *wren* or *tit* shall be able to pass along, from York to Canada, but I shall get intelligence of it."

During this journey, Wilson received many compliments and some subscriptions. He was also subjected

to some mortifying disappointments. Some, from whom he expected at least sympathy and encouragement, looked at his volume with indifference, or returned it to him with a cold compliment. The Governor of New York, he says, "turned over a few pages, looked at a picture or two; asked me my price, and, while in the act of closing the book, added, 'I would not give a hundred dollars for all the birds you intend to describe, even had I them alive.' Occurrences such as these distress me, but I shall not lack ardour in my efforts." In another place he gives an amusing account of a rebuff which he received from a public functionary in Pennsylvania. "In Hanover, Penn., a certain Judge H. took upon himself to say, that such a book as mine ought not to be encouraged, as it was not within the reach of the commonality, and, therefore, inconsistent with our republican institutions! By the same mode of reasoning, which I did not dispute, I undertook to prove him a greater culprit than myself, in erecting a large, elegant, three-story brick house, so much beyond the reach of the *commonality*, as he called them, and, consequently, grossly contrary to our republican institutions. I harangued this Solomon of the Bench more seriously afterwards; pointing out to him the great influence of science on a young nation like ours, and particularly the science of natural history, till he began to show such symptoms of *intellect* as to seem ashamed of what he had said."—After his return from the North, having remained but a few days at home, he started on a tour to the South, visiting, in the course of it, every city and town of importance as far as Savannah, in Georgia. Of the first volume but

two hundred copies had been printed ; and, although the list of subscribers was not very much enlarged, the publisher was encouraged to strike off a new edition of three hundred more. The second volume was published in 1810, and the adventurous ornithologist almost immediately set out for New Orleans, by way of Pittsburg. He descended the Ohio alone in a skiff, as far as Louisville, upwards of seven hundred miles. Here he sold his frail bark ; and, having walked to Lexington, seventy miles farther, he purchased a horse, and, without a companion or a guide, made his way through the wilderness to Natchez, a distance of six hundred and seventy-eight miles. Some of the particulars of this journey, taken from a letter of the ornithologist, dated at Natchez, May 28, 1811, will give the best idea of his courage, enterprise, and general character.

"I was advised by many not to attempt this journey alone ; that the Indians were dangerous, the swamps and rivers almost impassable without assistance ; and a thousand other hobgoblins were conjured up to dissuade me from going *alone*. But I weighed all these matters in my mind ; and, attributing a great deal of this to vulgar fears and exaggerated reports, I equipped myself for the attempt. I rode an excellent horse, on whom I could depend ; I had a loaded pistol in each pocket, a loaded musket belted across my shoulder, a pound of gunpowder in my flask, and five pounds of shot in my belt. I bought some biscuit and dried beef, and on Friday morning, May 4th, I left Nashville. * * * Eleven miles from Nashville, I came to the Great Harpath, a stream of about fifty yards

which was running with great violence. I could not discover the entrance of the ford, owing to the rain and inundations. There was no time to be lost. I plunged in, and almost immediately my horse was swimming. I set his head aslant the current; and, being strong, he soon landed me on the other side. * * * Next day, the road winded along the high ridges of mountains that divide the waters of the Cumberland from those of the Tenessee. I passed a few houses to-day; but met several parties of boatmen returning from Natchez and New Orleans, who gave me such an account of the road, and the difficulties they had met with, as served to stiffen my resolution to be prepared for everything. These men were as dirty as Hottentots; their dress, a shirt and trousers of canvass, black, greasy, and sometimes in tatters; the skin burnt wherever exposed to the sun; each with a budget wrapped up in an old blanket; their beards, eighteen days old, added to the singularity of their appearance, which was altogether savage. These people came from the various tributary streams of the Ohio, hired at forty or fifty dollars a trip, to return back on their own expense. Some had upwards of eight hundred miles to travel." "On Monday, I rode fifteen miles, and stopped at an Indian's to feed my horse. * * * I met to-day two officers of the United States army, who gave me a more intelligent account of the road than I had received. I passed through many bad swamps to-day; and, about five in the evening, came to the banks of the Tenessee, which was swelled by the rain, and is about half a mile wide, thirty miles below the muscle shoals, and just below a

long island laid down in your small map. A growth of canes, of twenty or thirty feet high, covers the low bottoms; and these cane swamps are the gloomiest and most desolate-looking places imaginable. I hailed for the boat as long as it was light, without effect; I then sought out a place to encamp, kindled a large fire, stript the canes for my horse, ate a bit of supper, and lay down to sleep; listening to the owls and the *Chuck-wills-widow*, a kind of *Whip-poor-will*, that is very numerous here. I got up several times during the night, to recruit my fire, and see how my horse did; and, but for the gnats, would have slept tolerably well. These gigantic woods have a singular effect by the light of a large fire; the whole scene being circumscribed by impenetrable darkness, except that in front, where every leaf is strongly defined and deeply shaded. In the morning I hunted until about six, when I again renewed my shoutings for the boat, and it was not until near eleven that it made its appearance. * * The country now assumed a new appearance; no brush wood—no fallen or rotten timber: one could see a mile through the woods, which were covered with high grass fit for mowing. These woods are burnt every spring, and thus are kept so remarkably clean that they look like the most elegant noblemen's parks. A profusion of flowers, altogether new to me, and some of them very elegant, presented themselves to my view as I rode along. This must be a heavenly place for the botanist. The most noticeable of these flowers was a kind of Sweet William, of all tints from white to the deepest crimson; a superb thistle, the most beautiful I had ever seen; a species of Passion-

flower, very beautiful ; a stately plant of the sunflower family— the button of the deepest orange, and the radiating petals bright carmine, the breadth of the flower about four inches ; a large white flower like a deer's tail. Great quantities of the sensitive plant, that shrunk instantly on being touched, covered the ground in some places. * * * I met six parties of boatmen to-day, and many straggling Indians, and encamped about sunset near a small brook, where I shot a turkey, and, on returning to my fire, found four boatmen, who stayed with me all night, and helped to pick the bones of the turkey. In the morning I heard them gabbling all round me ; but not wishing to leave my horse, having no great faith in my guests' honesty, I proceeded on my journey. This day I passed through the most horrid swamps I had ever seen. They are covered with a prodigious growth of canes and high woods, which together shut out almost the whole light of day for miles. The banks of the deep and sluggish creeks that occupy the centre are precipitous, where I had often to plunge my horse seven feet down, into a bed of deep clay up to his belly, from which nothing but great strength and exertion could have rescued him; the opposite shore was equally bad, and beggars all description. For an extent of several miles, on both sides of these creeks, the darkness of night obscures every object around. * * * About half an hour before sunset, being within sight of the Indian's where I intended to lodge, the evening being perfectly calm and clear, I laid the reins on my horse's neck, to listen to a mocking-bird, the first I had heard in the Western country, which,

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perched on the top of a dead tree before the door, was pouring out a torrent of melody. I think I never heard so excellent a performer. I had alighted, and was fastening my horse, when, hearing the report of a rifle immediately beside me, I looked up, and saw the poor mocking-bird fluttering to the ground; one of the savages had marked his elevation, and barbarously shot him. I hastened over into the yard, and, walking up to him, told him that was bad, very bad?—*that this poor bird had come from a far distant country to sing to him,* and that in return he had cruelly killed him. I told him the Great Spirit was offended at such cruelty, and that he would lose many a deer for doing so. * * *

"On the Wednesday following, I was assailed by a tremendous storm of rain, wind, and lightning, until I and my horse were both blinded with the deluge, and unable to go on. I sought the first most open place, and, dismounting, stood for half an hour under the most profuse heavenly shower-bath I ever enjoyed. The roaring of the storm was terrible; several trees around me were broken off and torn up by the roots, and those that stood were bent almost to the ground; limbs of trees of several hundred weight flew past within a few yards of me, and I was astonished how I escaped. I would rather take my chance in a field of battle, than in such a tornado again.

"On the fourteenth day of my journey, at noon, I arrived at this place, having overcome every obstacle alone, and without being acquainted with the country; and, what surprised the boatmen more, *without whisky.* * * * The best view of the place and surrounding

scenery is from the old Spanish fort, on the south side of the town, about a quarter of a mile distant. From this high point, looking up the river, Natchez lies on your right, a mingled group of green trees and white and red houses, occupying an uneven plain, much washed into ravines, rising as it recedes from the bluff, a high precipitous bank of the river. * * * On your left you look down, at a depth of two or three hundred feet, on the river winding majestically to the south. This part of the river and shore is the general rendezvous of all the arks, or Kentucky boats, several hundreds of which are at present lying moored there, loaded with the produce of the thousand shores of this noble river. The busy multitudes below present a perpetually varying picture of industry ; and the noise and uproar, softened by the distance, with the continual crowing of the poultry with which many of these arks are filled, produce cheerful and exhilarating ideas. The majestic Mississippi, swelled by his ten thousand tributary streams, of a pale brown colour, half a mile wide, and spotted with trunks of trees, that show the different threads of the current and its numerous eddies, bears his depth of water past in silent grandeur. Seven gunboats, anchored at equal distances along the stream, with their ensigns displayed, add to the effect. * * * The whole country beyond the Mississippi, from south round to west and north, presents to the eye one universal level ocean of forest, bounded only by the horizon. So perfect is this vast level, that not a leaf seems to rise above the plain, as if shorn by the hand of heaven. At this moment, while I write, a terrific thunder-storm,

with all its towering assemblage of black, alpine clouds, discharging living lightning in every direction, overhangs this vast level, and gives a magnificence and sublime effect to the whole."

From Natchez our traveller continued his journey to New Orleans, and, as the sickly season was approaching, soon took passage in a ship bound to New York, where he arrived on the 30th of July, having considerably enlarged his stock of materials, and gained some new subscribers.

In September, 1812, Mr. Wilson started to visit his subscribers at the East. At Haverhill, N.H., he was the subject of a ludicrous mistake. The inhabitants, "perceiving among them a stranger of very inquisitive habits, and who evinced great zeal in exploring the country, sagaciously concluded that he was a spy from Canada, employed in taking sketches of the place to facilitate the invasion of the enemy. Under these impressions it was thought conducive to the public safety that Mr. Wilson should be apprehended; and he was accordingly taken into the custody of a magistrate, who, on being made acquainted with his character and the nature of his visit, politely dismissed him, with many apologies for the mistake."

During the remainder of this year, and the first half of 1813, he proceeded in his work with great assiduity. The difficulties he had to contend with were numerous and harassing. The greatest of them was his poverty. He laboured "without patron, fortune, or recompense." His only resource, now that his duties of assistant editor of the Cyclopedia were finished, was the colouring of the plates. This was a delicate task,

which he entrusted to others with hesitation, and generally only to be disappointed with the result. When his friends urged him to refrain from his exhausting labours, he would reply that "life is short, and without exertion nothing can be performed."

The seventh volume of the Ornithology was published in the early part of 1813, and he immediately made preparations for the succeeding volume, the letterpress of which was completed in August. He was not permitted to see it published. After an illness of but few days' duration, a disease which might, in his ordinary vigour, have been thrown off, terminated his life on the 23d of August, in the forty-seventh year of his age.

He had often expressed the wish, that, at his decease, he might be buried *where the birds might sing over his grave;* but those who were with him at the last, were unacquainted with this desire, and his remains were laid to rest in the cemetery of the Swedish church, in Southwark, Philadelphia.

In his person, Wilson was tall, slender, and handsome; his eye was intelligent, and his countenance expressive of a consciousness of intellectual resources above those of most with whom he was associated. His conversation and his letters were remarkable for liveliness, force, and originality. Although much attached to his new home on this side of the Atlantic, he never forgot the friends whom he had left on the other. In a letter to his father, written after the publication of the first volume of the Ornithology, he says: "I would willingly give a hundred dollars to spend a few days with you all in Paisley; but, like a true bird

of passage, I would again wing my way across the western waste of waters, to the peaceful and happy regions of America. * * * Let me know, my dear father, how you live and how you enjoy your health at your advanced age. I trust the publication I have now commenced, and which has procured for me reputation and respect, will also enable me to contribute to your independence and comfort, in return for what I owe you. To my step-mother, sisters, brothers, and friends, I beg to be remembered affectionately."

The work which he produced is a great honour to the country (an honour frequently acknowledged by distinguished foreigners); and although it yields to the still more splendid production of Audubon, yet time will enhance, not detract from, the honour due to so zealous, persevering, and industrious a naturalist. His descriptions we value, not only for their accuracy, but for the fine poetic sensibility which they so often display. "We need no other evidence of his unparalleled industry, than the fact, that of *two hundred and seventy-eight* species which have been figured and described in his Ornithology, *fifty-six* of these have not been noticed by any former naturalist; and several of the latter number are so extremely rare, that the specimens from which the figures were taken, were the only ones that he was ever enabled to obtain."

The most prominent trait of Wilson was his general sympathy with nature. Every rock, every tree, every flower, every rivulet, had a voice for him. No little bird sung which did not sing for his pleasure, or to tell him some story. Though obliged

by his art to take the life of many a beautiful warbler, he never did so for the sake of a cruel sport. His "victims" were after all his "friends," for whom he never ceased to plead, and whom he always commended to the kind care of the farmer. The nimble woodpecker he asserted to be a fellow-worker with man, destroying only the vermin which would otherwise injure the trees and the gardens. He defended the cat-bird against the prejudices of men and boys; for which prejudices, he says, he never heard any reason but that *they hated cat-birds*, just as some men say they hate Frenchmen. Even if king-birds did destroy bees, it was not with him a good argument for their extermination. "In favour of the orchard oriole," says a very pleasant biographer, "he shows, that, while he destroys insects without number, he never injures the fruit; he has seen instances in which the entrance to his nest was half closed up with clusters of apples; but so far from being tempted with the luxury, he passed them always with gentleness and caution. He enters into a deliberate calculation of the exact value of the red-winged blackbird, which certainly bears no good reputation on the farm; showing, that allowing a single bird fifty insects in a day, which would be short allowance, a single pair would consume twelve thousand in four months; and if there are a million pairs of these birds in the United States, the amount of insects is less by twelve thousand millions, than if the red-wing were exterminated." Sometimes he took upon himself to be the avenger of the wrongs of his feathered friends. "On one occasion," says the same writer,

"a wood thrush, to whose delightful melody he had often listened till night began to darken and the fire flies to sparkle in the woods, was suddenly missing, and its murder was traced to the hawk, by the broken feathers and fragments of the wing ; he declares that he solemnly resolved, the next time he met with a hawk, to send it to the shades, and thus discharge the duty assigned to the avenger of blood."

Towards all animals he was sincerely humane. A beautiful little incident, which he relates, will illustrate this :—"One of my boys caught a mouse in school a few days ago, and directly marched up to me with his prisoner. I set about drawing it that same evening ; and, all the while, the pantings of its little heart showed that it was in the most extreme agonies of fear. I had intended to kill it in order to fix it in the claws of a stuffed owl ; but happening to spill a few drops of water where it was tied, it lapped it up with such eagerness, and looked up in my face with such an expression of supplicating terror, as perfectly overcame me. I immediately untied it, and restored it to life and liberty. The agonies of a prisoner at the stake, while the fire and instruments of torture are preparing, could not be more severe than the sufferings of that poor mouse ; and, insignificant as the object was, I felt at that moment the sweet sensation that mercy leaves on the mind, when she triumphs over cruelty."

As might be supposed, Wilson was a shrewd observer, and independent in his opinions. He had no faith in the stories of birds being fascinated by snakes, and utterly ridiculed the assertions of some naturalists, that swallows spend the winter torpid in the

trunks of old trees, or in the mud with eels at the bottom of ponds.

An admirable trait of his character was a love of justice and truth. In his dealings with others, he was honourable and generous. Extremely temperate in eating and drinking, he was able to endure the necessary fatigues and privations attendant on his wandering life, without sinking under them, or contracting dangerous diseases. His fault was an irritability of temper ; but this we can pardon when counterbalanced by so many virtues, while from his life we may draw an encouraging lesson of what may be accomplished by perseverance, industry, and self-reliance.

ROBERT BLOOMFIELD.

Robert Bloomfield, the author of the "Farmer's Boy," was born in 1766, at a small village in Suffolk, England. His father died before Robert was a year old. His mother was left with the charge of five other children. In these circumstances, in order to obtain a maintenance for herself and her family, she opened a school, and, of course, taught her own children the elements of reading, along with those of her neighbours. The only school education which Robert ever received, in addition to what his mother gave him, was two or three months' instruction in writing at a school in the town of Ixworth. At the time when he was sent to this seminary, he was in his seventh year; and he was taken away so soon in con-

sequence of the second marriage of his mother. Her new husband, probably, did not choose to be at any expense in educating the children of his predecessor.

We have no account in what manner Robert spent his time from his seventh to his eleventh year; but at this age he was taken into the service of a brother of his mother, a Mr. Austin, who was a respectable farmer on the lands of the Duke of Grafton. His uncle treated him exactly as he did his other servants, but that was kindly, and just as he treated his own sons. Robert, like all the rest of the household, laboured as hard as he was able; but, on the other hand, he was comfortably fed and lodged, although his board seems to have been all he received for his work. His mother undertook to provide him with the few clothes which he needed, and this was more than she well knew how to do. Indeed she found so much difficulty in fulfilling her engagement, that she at length wrote to two of her eldest sons, who were employed in London as shoemakers, requesting them to assist her by trying to do something for their brother, who "was so small of his age," she added, "that Mr. Austin said that he was not likely to be able to get his living by hard labour." To this application her son George wrote in reply, that, if she would let Robert come to town, he would teach him to make shoes, and his other brother, Nathaniel, would clothe him. The anxious and affectionate mother assented to this proposal; but she could not be satisfied without accompanying her son to the metropolis, and putting him herself into his brother's hands. "She charged me," writes Mr. George Bloomfield, "as I valued a mother's blessing, to watch over

him, to set good examples for him, and never to forget that he had lost his father."

When Robert came to London, he was in his fifteenth year. What acquaintance he had with books, at this time, is not stated; but it must have been extremely scanty. We find no notice, indeed, of his having been in the habit of reading at all, while he was with Mr. Austin. The place in which the boy was received by his two brothers was a garret in a court in Bell Alley, Coleman Street, where they had two *turn-up* beds, and five of them worked together. "As we were all single men," says George, "lodgers at a shilling per week each, our beds were coarse, and all things far from being clean and snug, like what Robert had left at Sapiston. Robert was our man to fetch all things to hand. At noon he brought our dinners from the cook's shop; and any one of our fellow-workmen that wanted to have anything brought in, would send Robert, and assist in his work, and teach him for a recompense for his trouble. Every day when the boy from the public house came for the pewter pots, and to learn what porter was wanted, he always brought the yesterday's newspaper. The reading of this newspaper we had been used to take by turns; but, after Robert came, he mostly read for us, because his time was of the least value." The writer goes on to state, that in this his occupation of reader of the newspapers, Robert frequently met with words which were new to him, and which he did not understand—a circumstance of which he often complained. So one day his brother, happening to see, on a book-stall, a small English dictionary, which had been very ill used, bought it for

him for fourpence. This volume was to Robert a valuable treasure; and, by consulting and studying it, he soon learned to comprehend perfectly whatever he read. The pronunciation of some of the hard words, however, caused him much trouble; but by an auspicious circumstance he was at length put into the way of having his difficulties here also considerably diminished. One Sabbath evening, he and his brother chanced to walk into a dissenting meeting-house in the Old Jewry, where an individual of great popularity and talent was delivering a discourse. This was Mr. Fawcet. His manner was highly rhetorical. Robert was so much struck by his oratory, that, from this time, he made a point of regularly attending the chapel every Sabbath evening. In addition to the higher improvement of Mr. Fawcet's discourses, he learnt from him the proper accentuation of difficult words, which he had little chance of hearing pronounced elsewhere. He also accompanied his brother sometimes, though not often, to a debating society. Besides the newspapers, too, he at this time read aloud to his brothers and their fellow-workmen several books of considerable extent—a History of England, British Traveller, and a geography—a sixpenny number of each of which in folio they took in every week. Robert spent in this way about as many hours every week in reading, as boys generally do in play.

These studies, even though somewhat reluctantly applied to by Robert, doubtless had considerable effect in augmenting the boy's knowledge, and otherwise enlarging his mind. But it was a work different from any of those which have been mentioned, which first

awakened his literary genius. "I at this time," says Mr. George Bloomfield, "read the London Magazine, and in that work about two sheets were set apart for a review. Robert seemed always eager to read this review. Here he could see what the literary men were doing, and learn how to judge of the merits of the works which came out; and I observed that he always looked at the poet's corner. One day he repeated a song which he composed to an old tune. I was much surprised that he should make so smooth verses; so I persuaded him to try whether the editor of our paper would give them a place in the poet's corner. He succeeded, and they were printed." After this, Bloomfield contributed other pieces to the same publication into which his verses had been admitted; and under the impulse of its newly kindled excitement, his mind would seem to have suddenly made a start forwards, which could not escape the observation of his associates. His brother and fellow-workmen in the garret began to get instruction from him. Shortly after, upon removing to other lodgings, they found themselves in the same apartment with a singular character; a person named James Kay, a native of Dundee. He was a middle-aged man, and of a good understanding. He had many books, and some which he did not value; such as The Seasons, Paradise Lost, and some novels. These books he lent to Robert, who spent all his leisure hours in reading The Seasons. In this book he took great delight. This first inspired him, in all probability, with the thought of composing a long poem on rural subjects. The design was also favoured, in some degree, by a

visit of two months, which he was induced to pay about this time to his native district. On this occasion, his old master, Mr. Austin, kindly invited him to make his house his home; and the opportunity he thus had of reviewing, with a more informed eye, the scenes in which he had spent his early years, could hardly fail to act, with a powerful effect, in exciting his imagination. It was at last arranged that he should be taken as an apprentice by his brother's landlord, who was a freeman in the city; and he returned to London. He was at this time eighteen years of age. It was not intended that his master should ever avail himself of the power which the indentures gave him, and he behaved in this matter very honourably. Robert, in two years more, learned to work very expertly at the shoemaking business. For some years after this, his literary performances seem to have amounted merely to a few effusions in verse, which he used generally to transmit in letters to his brother, who had now gone to live at Bury St. Edmunds, in his native county. Meanwhile he studied music, and became a good player on the violin.

About this time he was married, and hired a room in the second story of a house in Coleman Street. The landlord gave him leave to work at his trade in the light garret two flights of stairs higher.

It was while he sat plying his trade in the garret, in Bell Alley, with six or seven other workmen around him, that Bloomfield composed the work which first made his talents generally known, and for which principally he continues to be remembered,—his "Farmer's Boy." It is a very interesting fact, that, notwithstanding the

many elements of disturbance and interruption in the midst of which the author must, in such a situation, have had to proceed through his task, nearly the half of this poem was completed before he committed a line of it to paper. This is an uncommon instance both of memory and of self-abstraction. His feat, on this occasion, appears to have amounted to the composing and recollecting of nearly six hundred lines, without the aid of any record. The production of all this poetry, in the circumstances which have been mentioned, perhaps deserves to be accounted a still more wonderful achievement than its retention.

When the "Farmer's Boy" was finished, Bloomfield offered it to several booksellers, none of whom received it favourably. The editor of the Monthly Magazine, in the number for September 1823, gives the following account of his appearance:—"He brought his poem to our office; and, though his unpolished appearance, his coarse handwriting, and wretched orthography, afforded no prospect that his production could be printed, yet he found attention by his repeated calls, and by the humility of his expectations, which were limited to half a dozen copies of the Magazine. At length, on his name being announced where a literary gentleman, particularly conversant in rural economy, happened to be present, the poem was finally re-examined; and its general aspect excited the risibility of that gentleman in so pointed a manner, that Bloomfield was called into the room, and exhorted not to waste his time, and neglect his employment, in making vain attempts, and particularly in treading on ground which Thomson had sanctified. His earnestness and

confidence, however, led the editor to advise him to consult his countryman, Mr. Capel Lofft, of Trooton, to whom he gave him a letter of introduction. On his departure, the gentlemen present warmly complimented the editor on the sound advice which he had given the 'poor fellow;' and it was mutually conceived that an industrious man was thereby likely to be saved from a ruinous infatuation."

Mr. Lofft in time received the poem, and soon came to the conclusion, that, notwithstanding its forbidding aspect, it possessed original merit of a high order. Through his exertions it was sold to the publishers, Messrs. Vernor and Hood, for £50. These gentlemen subsequently acted very liberally in giving to the poet an additional sum of £200, and an interest in the copyright of his production. As soon as published, the poem was received with unexpected admiration. It was praised by literary men and critics, and read by everybody. This might seem the more remarkable because of its resemblance, at the first sight, to the "Seasons" of Thomson. Like that poet of nature, he sings of "Spring," "Summer," "Autumn," and "Winter." But the resemblance is almost confined to the mere announcement of the themes; for while Thomson weaves into his poem the various events of the rolling year, wherever witnessed or however produced, Bloomfield confines himself to the humble affairs of the farm. It is, indeed, his own early life that he lives over again. His tender imagination hallows the lowly paths which his boyish footsteps trod, and out of ordinary and vulgar events gathers the themes of poetry. Thus do fragrant and beautiful

flowers grow from the rankest soil. It is not nature which is vulgar; but we, with our gross conceptions, make it appear so. He, from whose eyes the scales have fallen, may see in events the most common and lowly, a soul of beauty.

Bloomfield sufficiently indicates the course of his poem, in the invocation with which the first brief canto opens:—

"O come, blest Spirit! whatsoe'er thou art,
Thou kindling warmth that hoverest round my heart,
Sweet inmate, hail! thou source of sterling joy,
That poverty itself cannot destroy,
Be thou my muse; and faithful still to me,
Retrace the paths of wild obscurity.
No deeds of arms my humble lines rehearse;
No alpine wonders thunder through my verse;
The roaring cataract, the snow-topt hill,
Inspiring awe, till breath itself stands still;
Nature's sublimer scenes ne'er charmed mine eyes,
Nor science led me through the boundless skies,
From meaner objects far my raptures flow;
O point these raptures! bid my bosom glow!
And lead my soul to ecstacies of praise
For all the blessings of my infant days!
Bear me through regions where gay fancy dwells;
But mould to truth's fair form what memory tells."

The poem throughout is characterized by simplicity and truth; and in these respects, as well as in picturesqueness, pathos, and strictly pastoral imagery, it probably equals any poem of the kind ever published. Within the first three years after its appearance, seven editions, comprising in all twenty-six thousand copies, were printed, and new impressions have since been repeatedly called for. In 1805, it was translated into Latin by Mr. Clubbe. It was also translated into French, under the title of *Le Valet du Fermier*.

From various sources the successful poet received substantial marks of the esteem in which he was held. Subscriptions were raised for him ; and many of the nobility, with the Duke of York at their head, made him valuable presents. The Duke of Grafton settled upon him a small annuity, and made him an under sealer in the seal-office. Besides this, the sale of the work itself brought him in a considerable sum. No wonder he said that "his good fortune appeared to him like a dream."

The circumstances of his subsequent life were not so happy as this auspicious commencement of his literary career seemed to promise. Ill health obliged him to give up his post at the seal-office, and he again resorted to his old trade of shoemaking, adding to it the making of Æolian harps. Having engaged in the bookselling business, he was unsuccessful ; and this, together with a diminished sale of his poems and his liberal charity to his relatives, who were numerous and all poor, reduced him almost to poverty. Mr. Rogers exerted himself to obtain a pension for his way-worn and sad-hearted brother poet, and Mr. Southey also manifested a deep interest in his welfare. Ill health was added to the sorrows of poverty, and a continual headache and great nervous irritability sometimes threatened to deprive him of reason. From this he was perhaps saved only by his decease. He removed to the country, and died at Shefford, in Bedfordshire, August 19, 1823, in the fifty-seventh year of his age. During his life he never deserted the muses. He published several short pieces in the Monthly Mirror ; a collection of rural tales ; and several volumes of poems.

One of his productions, "May-day with the Muses," published in the year of his death, "opens with a fine burst of poetical though melancholy feeling."

"Oh for the strength to paint my joy once more!
That joy I feel when winter's reign is o'er;
When the dark despot lifts his hoary brow,
And seeks his polar realm's eternal snow;
Though bleak November's fogs oppress my brain,
Shake every nerve, and struggling fancy chain;
Though time creeps o'er me with his palsied hand,
And frost-like bids the stream of passion stand."

These later works of his are of various degrees of merit. We will quote two of his shorter pieces, "The Soldier's Home," and some lines "To his Wife," as happily exhibiting some of the sweetest characteristics of his poetry. Of the first, Professor Wilson remarks, "The topic is trite, but in Mr. Bloomfield's hands it almost assumes a character of novelty. Burns's 'Soldier's Return' is not, to our taste, one whit superior."

THE SOLDIER'S HOME.

"My untried muse shall no high tone assume,
Nor strut in arms—farewell my cap and plume!
Brief be my verse, a task within my power,
I tell my feelings in one happy hour.
But what an hour was that? when from the main
I reached this lovely valley once again!
A glorious harvest filled my eager sight,
Half shocked, half waving in a flood of light;
On that poor cottage roof where I was born,
The sun looked down as in life's early morn.
I gazed around, but not a soul appeared;
I listened on the threshold, nothing heard;
I called my father thrice, but no one came;
It was not fear or grief that shook my frame,
But an o'erpowering sense of peace and home,
Of toils gone by, perhaps of joys to come.

The door invitingly stood open wide;
I shook my dust and set my staff aside.
How sweet it was to breathe that cooler air,
And take possession of my father's chair!
Beneath my elbow, on the solid frame,
Appeared the rough initials of my name,
Cut forty years before! The same old clock
Struck the same bell, and gave my heart a shock
I never can forget. A short breeze sprung,
And while a sigh was trembling on my tongue,
Caught the old dangling almanacs behind,
And up they flew like banners in the wind;
Then gently, singly, down, down, down they went,
And told of twenty years that I had spent
Far from my native land. That instant came
A robin on the threshold; though so tame,
At first he looked distrustful, almost shy,
And cast on me his coal-black, steadfast eye,
And seemed to say (past friendship to renew),
'Ah ha! old worn-out soldier, is it you?'
Through the room ranged the imprisoned humble bee,
And bombed, and bounced, and struggled to be free;
Dashing against the panes with sullen roar,
That threw their diamond sunlight on the floor;
That floor, clean-sanded, where my fancy strayed
O'er undulating waves the broom had made;
Reminding me of those of hideous forms
That met us as we passed the Cape of Storms,
Where high and loud they break and peace comes never;
They roll and foam, and roll and foam for ever.
But here was peace, that peace which home can yield:
The grasshopper, the partridge in the field,
And ticking clock, were all at once become
The substitute for clarion, fife, and drum.
While thus I mused, still gazing, gazing still,
On beds of moss that spread the window sill,

. . . . . .

Feelings on feelings, mingling, doubling rose;
My heart felt every thing but calm repose:
I could not reckon minutes, hours, nor years,
But rose at once and bursted into tears;
Then, like a fool, confused, sat down again,
And thought upon the past with shame and pain;
I raved at war and all its horrid cost,
And glory's quagmire, where the brave are lost.

On carnage, fire, and plunder, long I mused,
And cursed the murdering weapons I had used.

. . . . . .

But why thus spin my tale—thus tedious be?
Happy old soldier! what's the world to me!"

The lines "To his Wife," are full of delicate affection, full too of his narrow observation of nature and of genial sympathy with all things. They give us a delightful picture of the heart of him who wrote them.

TO HIS WIFE.

"I rise, dear Mary, from the soundest rest,
A wandering, way-worn, musing, singing guest.
I claim the privilege of hill and plain:
Mine are the woods, and all that they contain;
The unpolluted gale, which sweeps the glade;
All the cool blessings of the solemn shade;
Health, and the flow of happiness sincere.
Yet there's one wish—I wish that thou wert here;
Free from the trammels of domestic care,
With me these dear autumnal sweets to share;
To share my hearts ungovernable joy,
And keep the birth-day of our poor lame boy.
Ah! that's a tender string! Yet since I find
That scenes like these can soothe the harassed mind,
Trust me, 'twould set thy jaded spirits free,
To wander thus through vales and woods with me.
Thou know'st how much I love to steal away
From noise, from uproar, and the blaze of day;
With double transport would my heart rebound
To lead thee where the clustering nuts are found;
No toilsome efforts would our task demand,
For the brown treasure stoops to meet the hand.
Round the tall hazel, beds of moss appear
In green swards nibbled by the forest deer;
Sun, and alternate shade; while o'er our heads
The cawing rook his glossy pinions spreads;
The noisy jay, his wild woods dashing through;
The ring-dove's chorus, and the rustling bough;
The far-resounding gate; the kite's shrill scream;
The distant ploughman's halloo to his team.

This is the chorus to my soul so dear;
It would delight thee too, wert thou but here;
For we might talk of home, and muse o'er days
Of sad distress, and Heaven's mysterious ways;
Our chequered fortunes with a smile retrace,
And build new hopes upon our infant race;
Pour our thanksgivings forth, and weep the while;
Or pray for blessings on our native isle.
But vain the wish! Mary, thy sighs forbear,
Nor grudge the pleasure which thou canst not share:
Make home delightful, kindly wish for me,
And I'll leave hills, and dales, and woods for thee."

As these extracts sufficiently indicate, the poet was of an affectionate and amiable character. His genius did not get the better of his modesty, nor destroy his attachment for his humble but faithful friends. It is gratifying to know that those excellent and affectionate relations, his mother and brother, both lived to witness the prosperity of him who had been to each, in other days, the object of so much anxious care. It was the dearest of the poet's gratifications, when his book was printed, to present a copy of it to his mother, to whom upon that occasion, he had it in his power, for the first time, to pay a visit, after twelve years' absence from his native village. From a tribute to his memory, by a brother poet, Bernard Barton, we quote a single verse as a conclusion to this imperfect sketch.

"It is not quaint and local terms
Besprinkled o'er thy rustic lay,
Though well such dialect confirms,
Its power unlettered minds to sway;
But 'tis not these that most display
Thy sweetest charms, thy gentlest thrall,—
Words, phrases, fashion, pass away,
But Truth and Nature live through all."

WILLIAM FALCONER.

William Falconer, one of the most truthful "poets of the sea," was the son of a poor Edinburgh barber. He was born in 1730. Two other children, who with himself made up the family of his father, were deaf and dumb. His education, as he himself said, was confined to reading, writing, and a little arithmetic; but he eagerly grasped after whatever knowledge lay in his way. He was, however, early shut out from even his small opportunities for learning, by being sent to sea on board a Leith merchant ship. To this, he is supposed to refer in a passage in one of his poems.

> "On him fair Science dawn'd in happier hour,
> Awakening into bloom young Fancy's flower;
> But soon adversity, with freezing blast,
> The blossom wither'd, and the dawn o'ercast,
> Forlorn of heart, and by severe decree,
> Condemn'd *reluctant* to the faithless sea."

Before he was eighteen years of age, he had risen to the rank of second mate in the Britannia, a vessel engaged in the Levant trade. In one of his voyages in this vessel, he was shipwrecked off Cape Colonna, in Greece; and it is here that he lays the scene of "The Shipwreck," the poem by which he will long be remembered. In 1757, he was promoted to the *Ramilies* man-of-war; and as an opportunity was here afforded of improving his literary taste, he is said to have studied with great assiduity. Certain it is that he

gained a very good knowledge of the French, Spanish, and Italian languages, and learned something of the German. In the Ramilies, he was subjected to a disaster of more magnitude even than his former shipwreck. While making for Plymouth, the ship struck upon the shore; and of a crew of 734 men, only 26 escaped with their lives; among these was the poet. He had already given some evidence of poetic talent, and, two years after this, in 1762, he published the *Shipwreck*, which he dedicated to the Duke of York. It was subsequently greatly enlarged and improved, and has taken rank among the classical poems of England. Few poets have had such opportunities for observation of nautical life as Falconer enjoyed, and fewer still have had the experience which would enable them to commemorate so fearful a disaster.

The poem seems to be a picture of real life. The sights and sounds of the sea,—the gentle calm at sunset, when the ocean

"Glows in the west, a sea of living gold!"

the still evening,—the silent, sombre midnight,—the stories and songs of the sailors,—the call of the boatswain,—the sudden rise of the tempest,—the groaning, heaving, straining, of the storm-driven ship, and its final destruction upon the romantic promontory of old Sunium,—these are but a few of the points to which the genius of the poet directs the mind of the reader. The scene of the poem is not among the least happy circumstances of the work. It is laid in one of the most charming portions of the shore of a country whose bare name is suggestive of almost all that is beautiful

or profound in ancient literature and art, and of much that is exciting in the history of modern freedom. "In all Attica," says Byron, "if we except Athens itself and Marathon, there is no scene more interesting than Cape Colonna. To the antiquary and artist, sixteen columns [the remains of an ancient temple] are an inexhaustible source of observation and design: to the philosopher, the supposed scene of some of Plato's conversations will not be unwelcome; and the traveller will be struck with the beauty of the prospect over 'isles that crown the Ægean deep;' but for an Englishman, Colonna has yet an additional interest, as the actual spot of Falconer's Shipwreck. Pallas and Plato are forgotten in the recollection of Falconer and Campbell—

> 'Here in the dead of night, by Lonna's steep,
> The seaman's cry was heard along the deep.'"

A peculiarity of this poem is, that, while its poetic merits are great, it is a safe guide to practical seamen. It shows a thorough acquaintance with the art of navigation, and is replete with directions which have been approved by naval officers of distinguished character. Falconer was himself a thorough seaman. The "Shipwreck," in the words of one of his biographers, "is of inestimable value to this country, since it contains within itself the rudiments of navigation; if not sufficient to form a complete seaman, it may certainly be considered as the grammar of his professional science. I have heard many experienced officers declare, that the rules and maxims delivered in this poem, for the conduct of a ship in the most perilous emergency,

form the best, indeed the only opinions which a skilful mariner should adopt." This very characteristic, which adds much to the reality of the scene described, has been thought to detract a little from the interest with which a landsman would read the poem. To *his* ears, "bow-lines" and "clue-lines," "clue-garnets," "jears," "halliards," and "spilling-lines," sound technical and barbarous, while to the sailor they afford so many proofs of the capacity of the poet, and the truth of his story. We shall give a few quotations to show the character of the poem. He thus introduces the doomed vessel to the reader:—

"A ship from Egypt, o'er the deep impell'd
By guiding winds, her course for Venice held;
Of famed Britannia were the gallant crew,
And from that isle her name the vessel drew.
. . . . . .
Thrice had the sun, to rule the varying year,
Across th' equator roll'd his flaming sphere,
Since last the vessel spread her ample sail
From Albion's coast, obsequious to the gale.
She o'er the spacious flood, from shore to shore,
Unwearying, wafted her commercial store.
The richest ports of Afric she had view'd,
Thence to fair Italy her course pursued;
Had left behind Trinacria's burning isle,
And visited the margin of the Nile.
And now that winter deepens round the pole,
The circling voyage hastens to its goal.
They, blind to Fate's inevitable law,
No dark event to blast their hopes, foresaw;
But from gay Venice soon expect to steer
For Britain's coast, and dread no perils near."

The ship arrives at Candia, evening comes on, and midnight:—

"Deep midnight now involves the livid skies,
While infant breezes from the shore arise;

The waning moon behind a watery shroud,
Pale glimmer'd o'er the long protracted cloud;
A mighty ring around her silver throne,
With parting meteors cross'd portentous shone.

. . . . . .

Now Morn, her lamp pale glimmering on the sight,
Scatter'd before her van reluctant Night.
She comes not in refulgent pomp arrayed,
But sternly frowning, wrapt in sullen shade.
Above incumbent vapours, Ida's height.
Tremendous rock! emerges on the sight.
North-east the guardian isle of Standia lies,
And westward Freschin's woody capes arise.
With winning postures, now the wanton sails
Spread all their snares to charm th' inconstant gales;
The swelling stud-sails now their wings extend,
Then stay-sails sidelong to the breeze ascend.
While all to court the wandering breeze are placed;
With yards now thwarting, now obliquely braced."

The ship at last leaves the harbour, and sails away.

"The natives, while the ship departs the land,
Ashore with admiration gazing stand.
Majestically slow, before the breeze,
In silent pomp she marches on the seas;
Her milk-white bottom casts a softer gleam,
While trembling through the green translucent stream.
The wales, that close above in contrast shone,
Clasp the long fabric with a jetty zone.
Britannia, riding awful on the prow,
Gazed o'er the vassal wave that roll'd below;
Where'er she moved, the vassal waves were seen
To yield obsequious, and confess their queen.

. . . . . .

High o'er the poop, the fluttering wings unfurl'd
Th' imperial flag that rules the watery world.
Deep blushing armours all the tops invest,
And warlike trophies either quarter drest;
Then tower'd the masts; the canvass swell'd on high;
And waving streamers floated in the sky.
Thus the rich vessel moves in trim array,
Like some fair virgin on her bridal day.
Thus, like a swan she cleaves the watery plain;
The pride and wonder of the Ægean main."

Their hopes of a prosperous voyage were soon shaken. The breeze freshens into a gale ; the clouds become blacker and blacker ; the mainsail splits ; the crew are all upon deck, and all anxious.

"His race perform'd, the sacred lamp of day
Now dipt in western clouds his parting ray;
His sick'ning fires, half-lost in ambient haze,
Refract along the dusk a crimson blaze;
Till deep immerged the languid orb declines,
And now to cheerless night the sky resigns!
Sad evening's hour, how different from the past!
No flaming pomp, no blushing glories cast;
No ray of friendly light is seen around;
The moon and stars in hopeless shade are drown'd."

To relieve the labouring vessel, the guns are thrown overboard ; but the relief is but temporary. She springs a leak, all hands man the pumps, but the leak gains upon them. The mizen-mast is cut away. Still the storm swept them along, by "Falconera's rocky height," and towards the main land of Greece itself.

"Now, borne impetuous o'er the boiling deeps,
Her course to Attic shores the vessel keeps:
The pilots, as the waves behind her swell,
Still with the wheeling stern their force repel.

. . . . . .

So they direct the flying bark before
Th' impelling floods, that lash her to the shore.
As some benighted traveller, through the shade,
Explores the devious path with heart dismay'd;
While prowling savages behind him roar,
And yawning pits and quagmires lurk before.

. . . . . .

But now Athenian mountains they descry,
And o'er the surge Colonna frowns on high;
Beside the cape's projecting verge are placed
A range of columns, long by time defaced;
First planted by devotion to sustain,
In elder times, Tritonia's sacred fane.

Foams the wild beach below, with maddening rage,
Where waves and rocks a dreadful combat wage.

. . . . . .

And now, while wing'd with ruin from on high,
Through the rent clouds the ragged lightnings fly,
A flash, quick glancing on the nerves of light,
Struck the pale helmsman with eternal night.

. . . . . .

The vessel, while the dread event draws nigh,
Seems more impatient o'er the waves to fly;
Fate spurs her on; thus issuing from afar,
Advances to the sun some blazing star;
And, as it feels th' attraction's kindling force,
Springs onward with accelerated course.
With mournful look the seamen eyed the strand,
Where Death's inexorable jaws expand;
Swift from their minds elapsed all dangers past,
As, dumb with terror, they beheld the last.

. . . . . .

The genius of the deep, on rapid wing,
The black eventful moment seem'd to bring;
The fatal sisters on the surge before,
Yoked their infernal horses to the prore."

The ship is near its end.

"Uplifted on the surge, to heaven she flies,
Her shattered top half-buried in the skies,
Then headlong plunging thunders on the ground,—
Earth groans! air trembles! and the deeps resound.
Her giant bulk the dread concussion feels,
And quivering with the wound, in torment reels.
So reels, convulsed with agonizing throes,
The bleeding bull beneath the murderer's blows.
Again she plunges: hark! a second shock
Tears her strong bottom on the marble rock.
Down on the vale of Death, with dismal cries,
The fated victims shuddering roll their eyes
In wild despair, while yet another stroke,
With deep convulsion, rends the solid oak;
Till, like the mine, in whose infernal cell
The lurking demons of destruction dwell,
At length asunder torn, her frame divides;
And crashing, spreads in ruin o'er the tides."

If we had not extended these extracts almost too far already, it would be pleasing to give more of the separate pictures of beauty in which the poem abounds. Of the crew, but three were saved, and Falconer was one of them. His genius has invested Cape Colonna with an interest not its own, and the wreck of the Britannia may be remembered as long as the destruction of the Spanish Armada.

After publishing this poem, Falconer, by the advice of the Duke of York (to whom, as before mentioned, he had dedicated it), left the merchant service, and entered the *Royal George* as midshipman. After this ship was paid off, rather than wait until his time of service would allow him to become lieutenant, he accepted the appointment of purser on board the *Glory* frigate. It was not long before this vessel was laid up in ordinary, and the poet (who in the meantime was married to an accomplished lady) engaged in various literary pursuits. The most important of them was the compilation of a *Universal Marine Dictionary*, a work which has been approved by the professional men of the navy, as of great utility.

Falconer is said to have been in person slender and somewhat below the middling height, with a weather-beaten countenance, and an address rather awkward and forbidding. His mind was inquisitive and keenly observing. He was prone to controversy and satire, but full of good humour, and, like most of his profession, frank, generous, and kind. Having removed to London, he seems to have suffered from poverty. Entering into the politics of the times, he wrote a satire on Lord Chatham, Wilkes, and Churchill, which

failed. In 1768, Mr. Murray, a bookseller, proposed that he should unite with him as a partner in business, which it is probable that he would have done, had he not been appointed to the pursership of the frigate *Aurora*, bound to India. The frigate was to carry out three gentlemen, as supervisors of the affairs of the East India Company, and he was promised the office of private secretary; so that his prospects seemed favourable. The ship sailed from England, Sept. 30, 1769, touched at the Cape as is usual, and thenceforward was never heard of. She probably foundered in the Mozambique Channel, and no "tuneful Arion" was left to tell the melancholy fate of the lost. It seems singular that he who most eloquently and beautifully commemorated the perils of the sea, should himself have been so often subjected to them; and should, at last, be mysteriously gathered to the profound and secret caverns of the deep, as if the waves were greedy of the whole of him who had so well sung of their smiles and their wrath.

HUMPHREY DAVY.

Humphrey Davy was born at Penzance, in Cornwall, in 1778. His father followed the profession of a carver in wood in that town, where many of his performances are still to be seen in the houses of the inhabitants. All that we are told of Davy's school education is, that he was taught the rudiments of classical learning at a seminary in Truro. He was then placed

by his father, with an apothecary and surgeon in his native place; but instead of attending to his profession, he spent his time either rambling about the country or in experimenting in his master's garret, sometimes to the no small danger of the whole establishment. The physician and Davy at last agreed to part.

When rather more than fourteen years old, he was placed as pupil with another surgeon residing in Penzance; but it does not appear that his second master had much more success than his first, in attempting to give him a liking for the medical profession. The future philosopher, however, had already begun to devote himself, of his own accord, to those sciences in which he afterwards so greatly distinguished himself; and proceeding upon a plan of study which he had laid down for himself, he had, by the time he was eighteen years old, obtained a thorough knowledge of the rudiments of natural philosophy and chemistry, as well as made some proficiency in botany, anatomy, and geometry. The subject of metaphysics, it is stated, was also embraced in his reading at this period.

But chemistry was the science to which, of all others, he gave himself with the greatest ardour; and, even in this early stage of his researches, he seems to have looked forward to reputation from his labours in this department. "How often," said he, in the latter period of his life, "have I wandered about those rocks in search after new minerals, and when tired sat down upon those crags, and exercised my fancy in anticipations of future renown." The peculiar features of this part of the country, doubtless, contributed not a little

to give his genius the direction it took. The mineral riches concealed under the soil formed alone a world of curious investigation. The rocky coast presented a geological structure of inexhaustible interest. Even the various productions cast ashore by the sea were continually affording new materials of examination to his inquisitive and reflecting mind. The first original experiment, it is related, in which he engaged, had for its object to ascertain the nature of the air contained in the bladders of sea-weed. At this time he had no other laboratory than what he contrived to furnish for himself, by the assistance of his master's vials and gallipots, the pots and pans used in the kitchen, and such other utensils as accident threw in his way. These he converted with great ingenuity to his own purposes. On one occasion, however, he accounted himself particularly fortunate in a prize which he made. This was a case of surgical instruments with which he was presented by the surgeon of a French vessel that had been wrecked on the coast, to whom he had done some kind offices. Examining his treasure with eagerness, Davy soon perceived the valuable aid he might derive in his philosophical experiments from some of the articles. One of the principal of them was, in no long time, converted into a tolerable air-pump. The proper use of the instruments was, of course, as little thought of by their new possessor as that of his master's gallipots which he was wont to carry up to his garret. Davy's subsequent success as an experimentalist, was owing in no small degree to the necessity he was placed under, in his earlier researches, of exercising his skill and ingenuity in this

manner. "Had he," remarks his biographer, "been supplied, in the commencement of his career, with all those appliances which he enjoyed at a later period, it is more than probable that he might have never acquired that wonderful tact of manipulation, that ability of suggesting expedients, and of contriving apparatus so as to meet and surmount the difficulties, which must constantly arise during the progress of the philosopher through the unbeaten tracks and unexplored regions of science. In this art, Davy certainly stands unrivalled; and, like his prototype, Scheele, he was unquestionably indebted for his address to the circumstances which have been alluded to. There was never, perhaps, a more striking exemplification of the adage, that 'necessity is the parent of invention.'"

Davy first pursued his chemical studies without teacher or guide, in the manner which has been described, and aided only by the most scanty and rude apparatus. When still a lad, however, he was fortunate in becoming acquainted with Mr. Gregory Watt, son of the celebrated James Watt. This gentleman having come to reside at Penzance for the benefit of his health, lodged at Mrs. Davy's, and soon discovered the talent of her son. The scientific knowledge of Mr. Watt gave an accurate direction to the studies of the young chemist, and excited him to a systematic perseverance in his favourite pursuit. He was also providentially introduced to the notice of Mr. Davies Gilbert, since president of the Royal Society.

The boy, we are told, was leaning on the gate of his father's house, when Mr. Gilbert passed, accompanied by some friends, one of whom remarked, that there

was young Davy, who was so much attached to chemistry. The mention of chemistry immediately fixed Mr. Gilbert's attention; he entered into conversation with the young man, and becoming speedily convinced of his extraordinary talents and acquirements, offered him the use of his library, and whatever other assistance he might require in the pursuit of his studies. Mr. Gilbert and Mr. Watt, soon after this, introduced Davy to the celebrated Dr. Beddoes, who had just established at Bristol what he called his Pneumatic Institution for investigating the medical properties of the different gases. Davy, who was now in his nineteenth year, had for some time been thinking of proceeding to Edinburgh, in order to pursue a regular course of medical education; but Dr. Beddoes, who had been greatly struck by different proofs which he had given of his talents, and especially by an essay in which he propounded an original theory of light and heat, having offered him the superintendence of his new institution, he at once accepted the invitation. "The young philosopher," remarks a biographer, "was now fairly entered on his proper path, and from this period we may consider him as having escaped from the disadvantages of his early lot. But it was while he was yet poor and unknown, that he made those acquirements which both obtained for him the notice of his efficient patrons, and fitted him for the situation in which they placed him. His having attracted the attention of Mr. Gilbert, as he stood at his father's gate, may be called a happy incident in the providence of God; but it was one that never would have happened had it not been for the proficiency he had al-

ready made in science by his own endeavours. He had this opportunity of emerging from obscurity; but had he not previously laboured in the cultivation of his mind, it would have been no opportunity at all."

The experiments conducted by Davy, and under his direction, at the Bristol institution, were soon rewarded by important results; and of these Davy, when he had just completed his twenty-first year, published an account, under the title of "Researches, Chemical and Philosophical, chiefly concerning Nitrous Oxide, and its Respiration." In this publication, the singularly intoxicating effects produced by the breathing of nitrous oxide, were first announced. This annunciation excited considerable sensation in the scientific world, and at once made Davy generally known as a most ingenious and philosophic experimentalist. He was, in consequence, soon after its appearance, invited to fill the chemical chair of the Royal Institution, then newly established.

When he commenced his lectures, he was scarcely twenty-two years of age; but never was success in such an undertaking more marked and gratifying. He soon saw his lecture-rooms crowded, day after day, by all that was most distinguished in the rank and intellect of the metropolis; and his striking and beautiful elucidations of every subject that came under his review, riveted often to breathlessness the attention of his splendid auditory. The year after his appointment to this situation, he was elected professor of chemistry to the Board of Agriculture; and he greatly distinguished himself by the lectures which, for ten successive ses-

sions, he delivered in this character. They were published in 1813, at the request of the Board.

In 1806, he was chosen to deliver the Bakerian lecture before that society, and he performed the same task for several successive years. Many of his most brilliant discoveries were announced in these discourses. In 1812, he received the honour of knighthood from the prince regent, being the first person on whom his royal highness conferred that dignity. Two days after, he married a lady of considerable fortune. In 1813, he was elected a corresponding member of the French Institute. He was created a baronet in 1818. In 1820, he was chosen a foreign associate of the Royal Academy of Sciences at Paris, on the death of the illustrious Watt. He had been for some time secretary of the Royal Society; and on the death of Sir Joseph Banks, in 1820, he was, by an unanimous vote, raised to the presidency of that learned body—an office which he held till he was obliged to retire on account of ill health, in 1827, when his friend and first patron, Mr. Davies Gilbert, was chosen to succeed him. Little, we may suppose, did either of the two anticipate, when they first met, thirty years before, at the gate of Mrs. Davy, that they would thus stand successively, and in this order, at the head of the most distinguished scientific association in England.

The first memoir by Davy, which was read before the Royal Society, was presented by him in 1801. It announced a new theory, which is now generally received, of the galvanic influence, or the extraordinary effect produced by two metals in contact with each other, when applied to the muscle even of a dead ani-

mal, which the Italian professor, Galvani, had discovered. It was supposed, both by Galvani and his countryman Volta, who also distinguished himself in the investigation of this curious subject, that the effect in question was an electrical phenomenon, whence galvanism used to be called animal electricity; but Davy showed, by many ingenious experiments, that, in order to effect it, the metals in fact underwent certain chemical changes. Indeed, he proved that the effect followed when only one metal was employed, provided the requisite change was by any means brought about on it, as, for example, by the interposition, between two plates of it, of a fluid calculated to act upon its surface in a certain manner. In his Bakerian lecture for 1806, he carried the examination of this subject to a much greater length, and astonished the scientific world by the announcement of a multitude of the most extraordinary results, from the application of the galvanic energy to the composition and decomposition of various chemical substances. From these experiments he arrived at the conclusion, that the power called chemical affinity was in truth identical with that of electricity. Hence the creation of a new science, now commonly known by the name of electro-chemistry, being that which regards the supposed action of electricity in the production of chemical changes. The discourse in which these discoveries were unfolded, was crowned by the French Institute with their first prize, by a decision which reflects immortal honour upon that illustrious body; who thus forgot not only all feelings of mutual jealousy, but even the peculiar and extraordinary hostility

produced by the war which then raged between the two countries, in their admiration of genius and their zeal for the interests of philosophy.

In the interesting and extraordinary nature of its announcements, the Bakerian lecture of 1807 was as splendid a production as that of the former year. There are certain substances, as the reader is aware, known in chemistry by the name of alkalies, of which potash and soda are the principal. These substances chemists had hitherto in vain exhausted their ingenuity, and the resources of their art, in endeavouring to decompose. The only substance possessing alkaline properties, the composition of which had been ascertained, was ammonia, which is a gas, and is therefore called a volatile alkali; and this having been found to be a compound of certain proportions of hydrogen and nitrogen, an opinion generally prevailed that hydrogen would be found to be also a chief ingredient of the *fixed* alkalies. Davy determined, if possible, to ascertain this point, and engaged in the investigation with great hopes of success, from the surpassing powers of decomposition which he had found to belong to his new agent, the galvanic influence. The manner in which he pursued this subject is among the most interesting specimens of scientific investigation on record.

One of the most important of the laws of galvanic decomposition, which he had previously discovered, was, that when any substance was subjected to this species of action, its oxygen (an ingredient which nearly all substances contain) was developed at what is called the positive end or pole of the current of electricity, while, whenever any hydrogen or inflam-

mable matter was present, it uniformly appeared at the opposite or negative pole. Proceeding upon this principle, therefore, Davy commenced his work with a fixed alkali; and at first submitted it, dissolved in water, to the galvanic action. The result, however, was, that the water alone was decomposed, nothing being disengaged by the experiment but oxygen and hydrogen, the ingredients of that fluid, which passed off as usual, the former at the positive, the latter at the negative pole. In his subsequent experiments, therefore, Davy proceeded without water, employing potash in a state of fushion; and having guarded the process from every other disturbing cause that presented itself, by a variety of ingenious arrangements, he had at last the satisfaction of seeing the oxygen gas developed, as before, at the positively electrified surface of the alkali, while, at the same time, on the other side, small globules of matter were disengaged, having all the appearances of a metal. The long agitated question was now determined; the base of the fixed alkalies was clearly metallic. To ascertain the qualities of the metallic residue which he had thus obtained from the potash, was Davy's next object. From its great attraction for oxygen, it almost immediately, when exposed to the atmosphere, became an alkali again, by uniting with that ingredient; and, at first, it seemed on this account hardly possible to obtain a sufficient quantity of it for examination. But at last Davy thought of pouring over it a thin coating of the mineral fluid called naptha, which both preserved it from communication with the air, and, being transparent, allowed it to be examined.

But there was another course of investigation, into which this philosopher entered, which resulted in a practical discovery of high importance. This was the contrivance of the *safety-lamp*. In coal-mines, frequent explosions had been caused by the *fire-damp*, or inflammable gas, which is found in many parts of them. By a series of experiments, Davy found that this dangerous gas, which was known to be nothing more than the hydrogen of the chemists, had its explosive tendencies very much restrained by being mixed with a small quantity of carbonic acid and nitrogen (the ingredients which, along with oxygen, form atmospheric air ;) and that, moreover, if it did explode, when so mixed, the explosion would not pass through apertures less than one seventh of an inch in diameter. Proceeding therefore upon these ascertained facts, he contrived his safety-lamp. It consists of a small light fixed in a cylindrical vessel, which is everywhere air-tight except in the bottom, and which is formed of fine wire-gauze, and in the upper part there is a chimney for carrying off the foul air. The air admitted through the gauze suffices to keep up the flame, which in its combustion produces enough of carbonic acid and nitrogen to prevent the fire-damp, when inflamed within the cylinder, from communicating the explosion to that which is without. The heretofore destructive element, thus caught and detained, is therefore not only rendered harmless, but actually itself helps to furnish the miner with light, the whole of the interior of the cylinder being filled with a steady green flame, arising from the combustion of the hydrogen, which has been admitted in contact with the heat, but cannot carry back the

inflammation it has received to the general volume without. Armed with this admirable protection, therefore, the miner advances without risk, and with sufficient light to enable him to work, into recesses which formerly he would not have dared to enter. The safety-lamp has already been the means of saving many lives, and has enabled extensive mines or portions of mines to be wrought, which, but for its assistance, must have remained unproductive. The coal-owners of the northern districts, in 1817, invited Sir Humphrey Davy to a public dinner, and presented him with a service of plate of the value of L.2000, in testimony of what they felt to be the merit of this invention.

"The transformations of chemistry," remarks Mr. John F. W. Herschel, "by which we are enabled to convert the most apparently useless materials into important objects in the arts, are opening up to us every day sources of wealth and convenience, of which former ages had no idea, and which have been pure gifts of science to man. Every department of art has felt their influence, and new instances are continually occurring of the unlimited resources which this wonderful science develops in the most sterile parts of nature. Not to mention the impulse which its progress has given to a host of other sciences, what strange and unexpected results has it not brought to light in its application to some of the most common objects! Who, for instance, would have conceived that linen rags were capable of producing *more than their own weight* of sugar, by the simple agency of one of the cheapest and most abundant acids?—that dry bones could be a

magazine of nutriment, capable of preservation for years, and ready to yield up their sustenance in the form best adapted to the support of life, on the application of that powerful agent, steam, which enters so largely into all our processes, or of an acid at once cheap and durable ?—that saw-dust is susceptible of conversion into a substance bearing no remote analogy to bread ; and though certainly less palatable than that of flour, yet in no way disagreeable, and is both wholesome and digestible, as well as highly nutritive ? What economy in all processes where chemical agents are employed, is introduced by the exact knowledge of the proportions in which natural elements unite, and their mutual powers of displacing each other ! What perfection in all the arts where fire is employed, either in its more violent applications (as, for instance, in the smelting of metals by the introduction of well-adapted fluxes, whereby we obtain the whole product of the ore in its purest state), or in its milder forms, as in sugar-refining, the whole modern practice of which depends on a curious and delicate remark of a late eminent scientific chemist on the nice adjustment of temperature at which the crystalization of syrup takes place ; and a thousand other arts which it would be tedious to mention."

We have not space to enumerate many other splendid discoveries of this great philospher. In 1827, his health had become so poor, that he found it necessary to seek relaxation from his engagements, and accordingly resigned the presidency of the Royal Society. Immediately after this he proceeded to the continent. During his absence from England, he still continued

his chemical researches, the results of which he communicated in several papers to the Royal Society. He also, notwithstanding his increasing weakness and sufferings, employed his leisure in literary compositions on other subjects, an evidence of which appeared in his "Salmonia," a treatise on fly-fishing, which he published in 1828. This little book is full of just and pleasing descriptions of some of the phenomena of nature, and is imbued with an amiable and contented spirit. His active mind, indeed, continued, as it would seem, to exert itself to the last, almost with as unwearied ardour as ever. Besides the volume which we have just mentioned, another work, entitled "The Last Days of a Philosopher," which he also wrote during this period, has been given to the world since his death. He died at Geneva, on the 30th of May, 1829. He had only arrived in that city the day before; and having been attacked by an apoplexy after he had gone to bed, expired at an early hour in the morning.

"No better evidence," says his biographer, "can be desired than that which we have in the history of Davy, that a long life is not necessary to enable an individual to make extraordinary progress in any intellectual pursuit to which he will devote himself with all his heart and strength. This eminent person was indeed early in the arena where he won his distinction, and the fact, as we have already remarked, is a proof how diligently he must have exercised his mental faculties during the few years that elapsed between his boyhood and his first appearance before the public. Although during this time he had scarcely any one to guide his studies, or even to cheer him onward, yet

notwithstanding that, he had taken his place among the known chemists of the age, almost before he was twenty-one. The whole of his brilliant career in that character, embracing so many experiments, so many literary productions, and so many splendid and valuable discoveries, extended only over a space of not quite thirty years. He had not completed his fifty-first year when he died. Nor was Davy merely a man of science. His general acquirements were diversified and extensive. He was familiar with the principal continental languages, and wrote his own with an eloquence not usually found in scientific works. All his writings, indeed, show the scholar and the lover of elegant literature, as well as the ingenious and accomplished philosopher. Like almost all those who have greatly distinguished themselves in the world of intellect, he selected his one favourite path, and persevered in it with great energy ; while he nevertheless revered wisdom and genius in all their manifestations."

Of the religious opinions and feelings of Sir Humphrey Davy we know very little. The following striking sentence is found in one of his moral works. "I envy," says he, "no quality of the mind or intellect in others ; not genius, power, wit, or fancy ; but if I could choose what would be most delightful, and I believe most useful to me, I should prefer *a firm religious belief* to every other blessing."

CARSTEN NIEBUHR.

Carsten Niebuhr was born on the 17th of March, 1733, in Hadeln, then belonging to the province of Friesland, Denmark, but since united with the kingdom of Hanover, Germany. He lost his mother before he was six weeks old. He grew up under the care of a step-mother in his father's house, where his way of life and employments, as well as his education, were those common to the peasant boys of his country. It was probably owing to his own eager desire for knowledge that his father was induced, only with a view of his being somewhat better instructed than a common peasant, to send him to the grammar school in Otterndorf, whence he afterwards went to that at Altenbruch. But the removal of the schoolmaster of the place, and the prejudices of the guardians, (for his father had died in the interval,) put an end to his school-studies before he had gone far enough to have them sufficiently impressed on his memory to be of any service to him when he afterwards resumed them. The division of his father's property between the surviving children had left him, instead of the farm, which had been so long the hereditary possession of the family, only a very small capital, quite inadequate to the purchase of any land for himself; and necessity would have led him to acquire knowledge, as a means of subsistence, even if he had been of a character to endure to live without education, and without employment. He was obliged, however, to content himself

with such accomplishments as were attainable without school learning; he therefore, for a year, pursued music with great zeal, and learned to play on several instruments with a view to earn his living as an organist. As this employment, likewise, did not meet the approbation of his guardians, his maternal uncle took him home to his own house, where he passed about four years, during which his life was once more that of a peasant. The older he grew, however, the less could he endure the void and dulness of this way of life, which can only be relieved, either, as in old times, by a share in the general deliberation on the affairs of the community, and by cheerfulness and merriment, or, as is the case with the English farmer, by a participation in the advantages of education and literary amusement. He felt an irresistible impulse to learn, to employ himself, and to render himself generally useful.

The providential circumstances which determine the course of life of distinguished men, deserve to be remembered. In the highest degree providential was that which gave to Niebuhr the direction which he thenceforth followed, until it led him to become one of the most eminent travellers of modern times. A law suit had arisen concerning the superficial contents of a farm, which could only be decided by measurement, and as there was no land surveyor in Hadeln, the parties were obliged to send for one to another place. Niebuhr felt for the honour of his native district with all the warmth of old times, and this occurrence appeared to him disgraceful to it. He could now fulfil a duty towards his country by learning the ne-

glected art, which at the same time furnished him with an occupation and an object such as he desired. Learning that instruction in practical geometry was to be had in Bremen, he immediately, on arriving at age, repaired to that city. This plan was frustrated; the teacher upon whom he depended was dead; but he did not disdain the instruction of a humble practitioner of the art. He, however, would be obliged to lodge and board in his house, and here the bashful, strictly decorous, and self-distrusting young peasant, found two town-bred young ladies, sisters of his intended teacher, whose attentions appeared to him so singular that he quickly took his departure. He now turned his eyes towards Hamburg, but there he was destined again to experience disappointment, and to have his perseverance put to the test.

He had passed his two-and-twentieth year when he went to Hamburg to avail himself of Succow's instructions in mathematics, and, without any false shame on account of his age, to begin his school-studies anew, his income was not sufficient to maintain him even with that rigid economy which was natural to him. He determined, however, to spend just so much of his small capital as would enable him to accomplish his end. He arrived at Hamburg in the summer of the year 1755. But just at this time, Succow was called to Jena; the mathematical chair was not filled till Büsch was appointed to it. The severest application to private instruction was, therefore, necessary to make the lessons at the gymnasium (or public school) intelligible or profitable to him. A countryman of his, named Witke, who, at that time, lived at Hamburg as

candidate for holy orders, and who afterwards died at Otterndorf, where he was pastor, gave him this private instruction with true cordiality and friendship. Niebuhr always spoke of him as the person who laid the foundation of his education, and, as such, honoured and loved him with sincere affection. Notwithstanding his uncommon exertions, and the strength of his body and mind, twenty months (eight of which were passed in nearly preparatory studies, for the Latin tongue was almost entirely unknown to him) were quite insufficient for one, who began to learn so late in life, to acquire that amount of knowledge which more favoured youths bring with them to the university. Among other things thus unavoidably neglected was Greek, of which he always lamented the want. Under Büsch he had begun to learn mathematics. He was the earliest and most distinguished of all his pupils, and in subsequent life, became his most intimate friend. To stop in the middle of any undertaking was thoroughly repugnant to his whole character. He had gone to Hamburg solely with a view to acquire a knowledge of geometry, and of some things commonly taught in the schools; but as soon as he had become acquainted with the sciences, he could not rest till he was able to embrace them in all their extent and depth. In the spring of 1757, he repaired to Göttingen. The mathematics continued to be his favourite study. He was now more than ever compelled, by the diminution of his little substance, to aim at some employment by which he could maintain himself, and to which his studies would lead. This he now looked to in the Hanoverian engineer corps, in which (as was the case in nearly

the whole military service of Germany) men of efficient mathematical attainments were extremely rare. There he might hope to obtain by merit a competent support. He studied with the steadiness which a fixed, simple, and prudent plan of life ensures, from the spring of 1757 for more than a year, undisturbed by the war which frequently raged around Göttingen. At this time he recollected that an endowment, or fund for exhibitions, existed at this university, and begged his friend to ascertain whether it was only for poor students in the strict sense of the term, or whether it was endowed without that limitation, "as a means of persevering in the study of something useful and important. In this case alone could he allow himself to apply for it." He received it and appropriated it entirely to the purchase of instruments.

At this period Frederick the fifth reigned in Denmark in enviable tranquillity. Louis the Fourteenth's memory still shone throughout Europe, with all that false glitter which had hung around his name during his life, and he was well known to be the model after which the ministers of the Danish monarch endeavoured, as far as it was compatible with the character of a peaceful king, to form their sovereign. Seldom, however, have the aims of ministers been less liable to reproach than were those of the then baron J. H. E. Bernstorf; and among all the statesmen of the continent, there was not, perhaps, one of his time so well informed, so noble minded, and so intelligent. The extraordinary and beneficent qualities and endowments of the second count Bernstorf will be remembered by a grateful nation, since what he effected

remains indestructible, and forms the sole basis for future reforms and improvements. Posterity will perhaps mention, as among the noblest actions of his uncle, J. H. E. Bernstorf, the emancipation of his serfs, or the slaves of the soil; the leisure which he insured to Klopstock, and the scientific expedition which he sent into Arabia. This enterprise was originally owing to Michaelis, who had represented to the minister of state that many elucidations of the Old Testament might be obtained by personal observation and inquiry in Arabia, which might be regarded as hitherto untrodden by European feet. The original idea in the mind of the author extended no farther than this; that a single traveller, an oriental scholar out of his own school, should be sent by way of India to Yemen; a plan which would then have caused the undertaking to end in nothing, even supposing the traveller ever to have found his way back. Happily Bernstorf immediately perceived the defectiveness of the plan, and replied to it by a proposal to render the mission far more extensive in objects and outfit. As Bernstorf took up the project with all the vivacity and liberality for which he was so remarkable, and fully empowered Michaelis to propose an oriental scholar to him, it might have been expected that Michaelis would have named the man who, among all his contemporaries, was unrivalled for his knowledge of the Arabic language, and, as all Germany knew, was fighting inch by inch with starvation,—Reiske,—whom, moreover, Michaelis had known from the time he was at school. But instead of Reiske, he recommended a pupil of his own, Von Haven, whose acquirements

must, at that time, have been those of a mere schoolboy, since a two years' residence at Rome, (whither he went to prepare himself under the Maronites,) and even the journey itself, never raised him above the meanest mediocrity. Michaelis was also commissioned by Bernstorf to propose the mathematicians and natural historians. For the choice of these men, Michaelis applied to Kästner, one of the Göttingen Society of Sciences, of which he was then director. A student of Hanover, Bölzing, at first accepted the proposal, but after a short time withdrew his promise. Kästner next proposed Niebuhr. One day in the summer of 1758, on his way from a meeting of the Society, to which he had just proposed Niebuhr, he walked into his room. "Have you a mind to go to Arabia?" said he. "Why not, if anybody will pay my expenses," answered Niebuhr, whom nothing bound to his home, and who had an unbounded desire for seeing the world. "The King of Denmark," replied Kästner, "will pay your expenses." He then explained the project and its origin. Niebuhr's resolution was taken in a moment, so far as his own inclination was concerned. But as he thought very humbly of himself, and most reverentially of science and of the truly instructed, he despaired of his own ability and power of being useful. On this head, however, Kästner set him at ease by the promise of a long term of preparation, which he might employ chiefly under Mayer, in astronomy, and by the assurance that, with his determined industry and perseverance, the allotted time would be fully sufficient. The same evening Niebuhr, who wanted nothing to fix his resolution, but

Mayer's promise to instruct him in astronomy, called on the philosopher. Mayer, who was not so sanguine a man as Kästner, cautioned him against a determination which, with his character, would be irrevocable, while he knew not the dangers and fatigues which he was about to brave. He, however, promised the desired instruction. Michaelis, whom he visited the following day, probably saw that there was levity and precipitation in so prompt a resolution, and pressed upon him to delay a week to reconsider the matter. It passed, but Niebuhr did not trouble himself with any further deliberation on a subject upon which his mind was already thoroughly resolved, and Michaelis now regarded the engagement as definitively accepted. His conditions were a year and a half for preparation; and during this period, the same salary as Von Haven received. Bernstorf assented to this arrangement without the slightest hesitation. Niebuhr now lived solely for his object. He pursued his studies in pure mathematics, perfected himself in drawing, and sought to acquire such historical information as was attainable with that degree of learning which he had so lately and so imperfectly acquired, without neglecting his more immediate objects. He cultivated practical mechanics, with a view of acquiring greater dexterity in handling his instruments, and in various manual operations, the acquirement and practice of which in Europe, except for those whose business they are, is but a waste of time. His attention was, however, principally occupied by the private lessons of Michaelis in the Arabic language, and of Mayer in astronomy. These he remembered with very different

feelings. For the grammatical study of languages in general he had but little talent or inclination. At the end of a few months he gave up this course of instruction.

Tobias Mayer was undoubtedly one of the first astronomers and mathematicians of his time. The results of his labours consist principally of a catalogue of 992 stars, and his famous lunar and solar tables. His valuable theory of the moon, and the laborious calculation of these tables, together with the invention of Hadley's quadrant, in 1731, enabled Maskelyne to bring into general use the method of discovering the longitude by observing the distance of the moon from the sun, and certain fixed stars, called the lunar method. Mayer's zeal for teaching his pupil was as great as Niebuhr's for learning of him. Among all the men of whom he became acquainted in the course of his long life, there was none whom he so loved and honoured as Mayer; and the most intimate friendship subsisted between them. He retained an ardent attachment to Mayer's memory up to the most advanced age, and he hardly ever received from Providence any greater gratification than that of hearing that his first lunar observation reached his beloved teacher on his death-bed, before consciousness had left him, and had cheered and animated his last moments; and that these observations had decided the giving the English premium, offered for the discovery of the longitude, to the widow of the man to whom he felt that he was indebted for his acquirements in this branch of science. Mayer, on his part, had no more earnest solicitude than to educate a pupil who would apply his method

of determining the longitude, and his, at that time, unprinted lunar tables, of which Niebuhr made a copy. Mayer interested himself in the outfit of Niebuhr's journey, so entirely as if it had been his own personal affair, that he divided his quadrants with his own hands. The accuracy of this labour of friendship was proved by the observations which were made with it. About the time of commencing his journey, Niebuhr was appointed lieutenant of engineers ; a circumstance which only deserves notice for the sake of a letter which places his modesty and judgment in the most amiable light. " He was," as he wrote to a friend, " led to think of a title for himself, by Von Haven's appointment to a professorship in the university of Copenhagen. A similar one had been offered to him, but he held himself unworthy of it. The one which he had received appeared to him more suitable. He might have had that of captain, if he had asked for it ; but that, for a young man, would have been too much. As a lieutenant, it would be highly creditable to him to make valuable observations ; but as professor he should feel it disgraceful not to have sufficiently explored the depths of mathematical science." He had at that time no other plan than that of living in his native country, after the accomplishment of his mission, on the pension which was assigned to him.

The party consisted of Von Haven, already mentioned; Forskaal, in many respects eminently qualified for the undertaking; Cramer, a physician, a most unfortunate choice; Bauernfeind, a draughtsman, a respectable artist, but intemperate; and Niebuhr. On the 10th of March 1761, the travellers left the Elsineur

roads for the Mediterranean. The voyage was a pleasant one to Niebuhr. He endeavoured to make himself acquainted with the construction of the ship, and he exercised himself daily in nautical and astronomical observations, which procured him the satisfaction of being regarded by the officers as an active and useful member of their company. Mayer, in the instructions which he gave to Niebuhr, had constantly kept in view that his pupil would be placed in situations in which it would be absolutely necessary for him to be able to rely upon himself, and where he could not hope for the slightest assistance or support. He had taught him entirely himself, and encouraged him with the assurance that an active and clear-sighted man is generally able to discover means to overcome the obstacles which may oppose him. His method of teaching, which was entirely practical, was chiefly this: he first described to his pupil the object of the observation and the method of using the instruments; he then left him without any assistance, to try how far he could proceed in his observation and calculation, and desired him to tell him when he came to any insurmountable difficulty. He was obliged to describe exactly how far he had gone on well, and where his progress had been stopped, and then Mayer assisted him.

A stay of some weeks at Marseilles, and of a shorter time at Malta, procured a very agreeable recreation to the party. The scientific enterprise was known throughout Europe, and we should find it difficult now to picture to ourselves the universal interest in its success which ensured to the travellers the most cordial reception and the most respectful attentions. It was

an enterprise consonant with the spirit of the times, and in no manner solitary or strange. Asia was become an object of interest to Europeans, from the war which the two great maritime powers were then waging in India. England began to send out ships to circumnavigate the globe. It was just that period of general satisfaction and delight in science and literature, in which mankind believed that they had found the road that must inevitably lead to rapid advances in knowledge and improvements; men of letters enjoyed great consideration; and the interests of science and its followers were generally regarded as among the most important in which mankind could be engaged.

From Malta the expedition proceeded to the Dardanelles. In the Archipelago, Niebuhr was attacked with the dysentery, and was near dying. He recovered his health at Constantinople, but so slowly that, at the expiration of two months from the beginning of his illness, he had scarcely made sufficient progress to go on board a vessel bound for Alexandria without manifest danger. In Egypt, the party remained a whole year, in which time Niebuhr, in company with Von Haven and Forskaal, visited Mount Sinai. During their stay in Egypt, Niebuhr determined the longitude of Alexandria, Kheira, Raschid, and Damietta, by means of numerous lunar observations, with an accuracy which the astronomers of Bonaparte's expedition, to their great surprise, found fully equal to their own. The following is the description of the outfit of himself and his companions for their expedition to Mount Sinai. "We had made careful provision for everything which we thought necessary for the journey

before us. We had abundance of eatables, a tent, and beds. Most of the utensils carried on expeditions in these countries, have been described and drawn by other travellers; and indeed some of them are so convenient, that they might be introduced into European armies with signal advantage. Our little kitchen apparatus was of copper, well tinned inside and outside. Our butter we carried in a sort of pitcher, made of thick leather. Table cloths we did not want. A large round piece of leather was our table. This had iron rings attached to its edge, through which a cord was passed. After dinner it was drawn up, slung over a camel, and thus served the double office of a table and a bag. Our coffee cups (saucers we had none) were carried in a wooden box covered with leather, and wax candles in a similar box, enclosed in a leathern bag. In the lid of this box was a tube, which was our candlestick. Salt, pepper, and spice, we also kept in a little wooden box, with several lids screwed one over another. Instead of glasses we had little copper cups, beautifully tinned within and without. Our lanterns were of linen, and could be folded together like the little paper lanterns which children make in Europe, only that ours had covers and bottoms of iron. Each of us was furnished with a water pitcher of thick leather, out of which we drank; and as we sometimes found no water for two or three days, we carried a good many goat skins filled with it. We also took two large stone water jars with us, that we might be able to carry water ourselves on the journey from Suez to Djidda. Our wine we kept in large glass flasks, each holding twenty of our bottles. These vessels appeared

to us the best for the purpose; but when a camel falls, or runs against another with his load, they easily break, and therefore goat skins are better for the purpose. The hides which are used to contain water, have the hair on the outside; but those for wine have it on the inside, and are so well pitched, that the liquor acquires no bad taste."

In this journey, Niebuhr made astronomical and geographical observations as often as possible. Out of these laborious investigations grew the chart of the Red Sea, which, considering the circumstances under which it was made, was a masterly work. Von Haven died about the end of May 1763. Niebuhr was again attacked by dysentery, and was saved only by the greatest care and temperance. The climate and numerous annoyances which Forskaal had partly brought upon himself, and partly aggravated through his caprice, brought on a bilious disorder, of which he died at Jerim, on the 11th of July 1763. Mokha, situated in the arid desert of Tehama, is, during summer, a horrible residence, and but few days elapsed before the surviving travellers and their servant were attacked with the fever of the climate. Bauernfeind and the servant died at sea. Cramer reached Bombay, languished for some months, and died. *Niebuhr was saved by that extreme abstemiousness which renders a tropical climate as little dangerous to the Europeans as to natives.* While he was labouring under the dysentery, the physician had told him to abstain from meat, and to eat nothing but bread and a sort of rice soup. This regimen cured his illness. At the end of several weeks, the physician learned with astonishment, that

Niebuhr was patiently continuing a diet by means of which few Europeans could be induced to purchase their lives, even when labouring under dangerous illness. The reception which Niebuhr met with from the English at Bombay, was extremely cordial. In Egypt he had first learned to delight in the society of Englishmen; and there was laid the foundation for that mutual attachment which ever after continued uninterrupted. There he learned the English language. He also made a copy of his journal, and sent it through London to Denmark. After a stay of fourteen months he left Bombay, visited Mascat, and made himself acquainted with the state of the remarkable province of Oman. He then proceeded to Shiraz and Persepolis. The last night of his journey to Persepolis was perfectly sleepless. The picture of these ruins remained during his whole life indelibly engraven on his mind. They appeared to him the crown and glory of all which he had seen. He passed between three and four weeks amidst them in the desert, in unremitting labour, measuring and drawing the fragments. From Shiraz he crossed the Persian Gulf to Bassora. In Persia he collected historical documents concerning the fate of this unfortunate country, from the death of Nadir Shah up to his own times. From Bassora he proceeded through Bagdad and Mosul to Haleb. He was now perfectly at home; since he had been alone, he had been at liberty to conform, without molestation, to oriental manners and customs. He was also in as good health as at any period of his life. An opportunity of going to Jaffa tempted him to visit Palestine. After that he explored Lesser Asia, and reached

Constantinople on the 20th of February, 1767. After having spent five months in that city, he passed over Turkey in Europe to Poland, and in November reached Copenhagen. He was received by the court, by the ministers, and by the men of science, with the greatest distinction. Bernstorf, particularly, loaded him with marks of his esteem. The whole expense of the expedition was but £3780 sterling. It would necessarily have been much greater had not Niebuhr been the sole survivor for nearly the whole of the last four years; but although the sources of expense were thus greatly diminished, they were still more so by his scrupulous integrity; not only in avoiding every outlay not essential to the object, but in paying out of his private pocket for everything which could be regarded as a personal expense. He was now employed for some time in arranging his materials and preparing his journal for publication. He met in this undertaking with almost innumerable difficulties, owing to his want of an early literary education, to his extreme modesty, to the removal of his patron, Count Bernstorf, and to the unprovoked hostility of some of the literati of the country. In 1773, he was married to a daughter of the physician, Blumenberg. They had two children, a daughter, and B. G. Niebuhr, the illustrious author of the most learned and valuable history of Rome which has been written.

Niebuhr soon took up his abode at Meldorf, having had the office of secretary of the district given to him by the government. A great part of his time was employed on his farm. He also found great satisfaction in the company of Boie, the governor of the district.

Meanwhile, his children grew to an age to require instruction. This he gave them himself. "He instructed both of us," says his son, "in geography, and related to us many passages of history. He taught me English and French; better, at any rate, than they would have been taught by any one else in such a place; and something of mathematics, in which he would have proceeded much farther, had not want of zeal and desire in me unfortunately destroyed all his pleasure in the occupation. One thing was, indeed, characteristic of his whole system of teaching; as he had no idea how any one could have knowledge of any kind placed before him, and not seize it with the greatest delight and avidity, and hold to it with the steadiest perseverance, he became disinclined to teach, whenever we appeared inattentive or reluctant to learn. As the first instructions I received in Latin, before I had the happiness to become a scholar of the learned and excellent Jäger, were very defective, he helped me, and read with me Cæsar's Commentaries. Here, again, the peculiar bent of his mind showed itself; he always called my attention much more strongly to the geography than to the history. The map of ancient Gaul by D'Anville, for whom he had the greatest reverence, always lay before us. I was obliged to look out every place as it occurred, and to tell its exact situation. His instruction had no pretension to be grammatical;—his knowledge of the language, so far as it went, was gained entirely by reading, and by looking at it as a whole. He was of opinion that a man did not deserve to learn what he had not principally worked out for himself; and that a teacher

should be only a helper to assist the pupil out of otherwise inexplicable difficulties. From these causes his attempts to teach me Arabic, when he had already not that facility in speaking it without which it was impossible to dispense with grammatical instruction, to his disappointment and my shame, did not succeed. When I afterwards taught it myself, and sent him translations from it, he was greatly delighted. I have the most lively recollections of many descriptions of the structure of the universe, and accounts of eastern countries, which he used to tell me, instead of fairy tales, when he took me on his knee before I went to bed. I recollect too, that on the Christmas eve of my tenth year, by way of making the day one of peculiar solemnity and rejoicing to me, he went to a beautiful chest containing his manuscripts, which was regarded by us children, and indeed by the whole household, as a sort of ark of the covenant, took out the papers relating to Africa, and read to me from them. He had taught me to draw maps, and with his encouragement and assistance I soon produced maps of Habbesh and Sudan. I could not make him a more welcome birthday present, than a sketch of the geography of eastern countries, or translations from voyages and travels, executed as might be expected from a child. He had originally no stronger desire than that I might be his successor as a traveller in the East. But the influence of a very tender and anxious mother, upon my physical training and constitution, thwarted his plan almost as soon as it was formed. In consequence of her opposition, my father afterwards gave up all thoughts of it."

Niebuhr had the satisfaction to find that his merits as a traveller were more and more appreciated. His works were very popular in England. The crown prince of Denmark also showed him distinguished favour. In 1802, he was appointed foreign member of the French National Institute. In his various labours he was indefatigable. In his 71st and 72d years, he toiled through a great part of the night. Nor did his indefatigable zeal relax even when his eyes began to fail. The consequences of this night-work were irremediable and fatal. In a short time he could no longer see to read, and for writing he required an extraordinary quantity of light, and even then the lines were often intermingled. His wife, after many years of suffering, died in 1807. His daughter, and the widowed sister of his wife, who had lived with the family for twelve years, could now devote themselves wholly to render him the assistance of which he stood in so much need. Everything was read aloud to him. The conversation of Gloyer, his successor as secretary of the district, revived to his mind's eye many a faded or vanished picture of the East, and the books which this invaluable friend read aloud to him, and the circumstances which he related, put him in possession of the works and statements of more recent travellers. This was without comparison one of his highest enjoyments. "When I related to him," says his son, "the descriptions of any traveller newly returned from the East, or gave him in my letters any accounts of travels not known on the continent, his whole being seemed reanimated, and he dictated answers, which showed that his mental vision

was vivid and powerful as ever. It was still more remarkable that these new facts imprinted themselves on his mind with all the depth and sharpness with which objects are stamped on a youthful memory, and so remained up to the time of his death. He combined them with what he had himself observed and experienced.

"In the autumn of 1814," continues his son, "his appearance was calculated to leave a delightful picture in the mind. All his features, as well as his extinguished eyes, were the expression of the extreme and exhausted old age of an extraordinarily robust nature; —it was impossible to behold a more venerable sight. So venerable was it, that a Cossack who entered, an unbidden guest, into the chamber where he sat with his silver locks uncovered, was so struck with it, that he manifested the greatest reverence for him, and a sincere and cordial interest for the whole household. His sweetness of temper was unalterable, though he often expressed his desire to go to his final home, since all which he had desired to live for had been accomplished. A numerous, and as yet unbroken family circle was assembled around him, and every day in which he was not assailed by some peculiar indisposition, he conversed with cheerfulness and cordial enjoyment on the happy change which had taken place in public affairs. We found it very delightful to engage him in continued recitals of his travels, which he now related with peculiar fulness and vivacity. In this manner he spoke once, and in great detail, of Persepolis, and described the walls on which he had found the inscriptions and bas-reliefs, exactly as one would describe those of a building visited within a few

days and familiarly known. We could not conceal our astonishment. He replied, that as he lay in bed, all visible objects shut out, the pictures of what he had beheld in the East continually floated before his mind's eye, so that it was no wonder he could speak of them as if he had seen them yesterday. With like vividness was the deep intense sky of Asia, with its brilliant and twinkling host of stars which he had so often gazed at by night, or its lofty vault of blue by day, reflected, in the hours of stillness and darkness, on his inmost soul; and this was his greatest enjoyment."

Towards evening, on the 26th of April, 1815, some one read to him as usual, while he asked questions which showed perfect apprehension and intelligence. He then sunk into a slumber and departed without a struggle. A concourse of people from all parts of the country attended his body to the grave. The funeral was solemnized with all the honours which respect and affection can pay. He had attained the age of eighty-two. He was extremely frugal. Economy had become a habit with him in early life. As a peasant lad he drank nothing but water and milk; and at a later period he deviated from this simple diet, only in compliance with the custom of others, with which he every where made it a rule to conform, and he then drank an extremely small quantity of wine. He had no favourite dishes but the peasant fare of his native land. "At the highest point of elevation," says his biographer, "to which he attained, favoured by his prince, respected and admired by the learned and eminent of all countries, it was his pride that he was born a peasant of Free Friesland. His manners never lost the sim-

plicity, nor his morals the purity of that singular and estimable class of men. If ever there lived a man who might safely and reasonably be held up to the people as an object of imitation, it was Carsten Niebuhr. Not only was he a poor man,—an orphan,—born in a remote part of a remote province, far from all those facilities for acquiring knowledge, which in this age and country are poured out before the feet of the people; he was not even gifted in any extraordinary way by nature. He was in no sense of the word a *genius*. He had no imagination. His power of acquiring does not seem to have been extraordinarily rapid, nor his memory singularly retentive. In all cases where the force of that will, at once steady and ardent, which enabled him to master his favourite studies, was not brought to bear, his progress was slow and inconsiderable. It is not therefore in any supposed intellectual advantages that we must look for the causes of his rise to eminence. They are to be found rather in the moral qualities which distinguished him, qualities attainable in a greater or less degree by men of the humblest rank, of the most lowly intellect, the least favoured by situation or connection. He possessed, in an eminent degree, the distinguishing virtues of his country, sincerity, unadulterated and faithful love of truth, and honesty. The zeal with which he gave himself to a pursuit which might enable him to be useful to his native district; the total absence of vanity which characterized the whole course of his studies and of his journeyings;—the simplicity of his narrative, in which no more of himself and his individual feelings appears than is just neces-

sary to keep up the thread of the story;—the rigorous accuracy and anxiety after truth for which his travels have ever been and still remain pre-eminently distinguished among all who preceded, and all who have followed him on the same ground, afford ample evidence of the singleness and the steadiness of the motives which actuated him. The most punctilious honour marked his disbursement of the funds intrusted to his care by the Danish government, and he ever abstained with the utmost exactness from applying a farthing of this money to any object which could be considered by others, or which his own more fastidious delicacy could regard, as a personal gratification.

"His self-command was perfect. He could abstain from what was agreeable, and do what was disagreeable to him. He was conscientious, sober, temperate even to abstemiousness, laborious and persevering; neither discouraged nor elated by the incidents which he must have known were inseparable from the career which he had chosen."

GIOVANNI BATTISTA BELZONI.

This enterprising traveller was born at Padua, Italy, in 1778, where his father was a barber. The family, however, had belonged originally to Rome; and it is related that Belzoni, when only thirteen years of age, betrayed his disposition for travelling, by setting out one day along with his younger brother to make his way to that city, which he had long been haunted with

a passionate desire to see, fro. hearing his parents so often speak of it. The failing strength and courage of his brother, however, forced him to relinquish this expedition, after they had proceeded as far as the Apennines ; and he returned to assist his father once more in his shop, as he had already, for some time, been doing. But when he was three years older, nothing could detain him any longer in his native place ; and he again took the road to Rome, which he now actually reached. It is said that on his first arrival in this capital, he applied himself to the acquirement of a knowledge of the art of constructing machines for the conveyance and raising of water, with the view probably of obtaining a livelihood by the exhibition of curious or amusing experiments in that department of physics. It is certain, however, that he eventually adopted the profession of a monk. The arrival of Buonaparte in Italy, in 1800, brought him the opportunity, which he embraced, of throwing off his monastic habit ; being, by this time, heartily tired of the idleness and obscurity to which it consigned him. He then pursued, for some time, a wandering life, having, in the first instance, returned to his native town, and then proceeded in quest of employment to Holland, from whence, in about a year afterwards, he came back to Italy. By this time he had attained so uncommon a height, with strength proportioned to it, that he was an object of wonder wherever he was seen. It was probably with the expectation of being able to turn these personal advantages to account, that he determined, in 1803, to go over to England. On arriving there, accordingly, he first attempted to gain a

maintenance by walking over the country exhibiting hydraulic experiments, and feats of muscular strength; and accompanied by his wife, an English woman whom he had married soon after his arrival, he visited with this object all the principal towns both of Great Britain and Ireland. He continued for about nine years in England. In 1812, he sailed with his wife for Lisbon. After spending some time in that city, he proceeded to Madrid, where he attracted considerable attention by his performances. From Spain he went to Malta; and here, it is supposed, the idea first suggested itself to him of passing over to Egypt, as others of his countrymen had already done, and offering his services to the Pacha, the active and enterprising Mohammed Ali. Accordingly, carrying with him a recommendation from a Maltese agent of the Pacha's, he proceeded, still accompanied by his wife, to Cairo. On presenting himself to Ali, he was immediately engaged, on the strength of his professed skill in hydraulics, to construct a machine for watering some pleasure gardens at Soubra, on the Nile. This undertaking, it is said, he accomplished to the Pacha's satisfaction; but an accident having occurred to one of the persons looking on, at the first trial of the machine, the Turkish superstition, under the notion that what had happened was a bad omen, would not suffer the use of it to be continued. Belzoni was once more thrown on his own resources, probably as much at a loss as ever, what course to adopt.

At this time, the late Mr. Salt, the learned orientalist, was English Consul in Egypt, and embracing the opportunity which his situation afforded him, was ac-

tively employed in investigating and making collections of the remains of antiquity with which that country abounded. For this purpose he kept several agents in his employment, whose business it was to make researches, in all directions, after interesting objects of this description. To Mr. Salt, Belzoni now offered his services in this capacity, and he was immediately employed by that gentleman, in an affair of considerable difficulty : the removing and transporting to Alexandria of the colossal granite bust of Memnon, which lay buried in the sands near Thebes The manner in which Belzoni accomplished this, his first enterprise in his new line of pursuit, at once established his character for energy and intelligence Dressing himself as a Turk, he proceeded to the spot, and there half persuaded and half terrified the peasantry into giving him the requisite assistance in excavating and embarking the statue, till he had at last the satisfaction of seeing it safely deposited in the boat intended for its conveyance down the Nile. It reached England, and was placed in the British Museum.

Belzoni had now found his proper sphere, and henceforward his whole soul was engaged in the work of exploring the wonderful country in which he was, in search of the monuments of its ancient arts and greatness. In this occupation he was constantly employed, sometimes in the service of Mr. Salt, and sometimes on his own account. The energy and perseverance of character which he exhibited, were truly astonishing. In despite of innumerable obstacles, partly of a physical nature, and partly arising from the opposition of the natives, he at last succeeded in penetrating into

the interior of the temple of Ihamboul, in Upper Egypt, which was so enveloped in sand, that only its summit was visible. On returning from this expedition, he next undertook a journey to the Valley of Bebanel Malonk, beyond Thebes, where, from a slight inspection on a former occasion of the rocky sides of the hills, he had been led to suspect that many tombs of the old inhabitants would be found concealed in them. For some time he searched in vain in all directions for any indication of what he had expected to find, till at last his attention was turned to a small fissure in the rock, which presented to his experienced eye something like the traces of human labour. He put forward his hand to examine it, when the stones, on his touching them, tumbled down, and discovered to him the entrance to a long passage, having its sides ornamented with sculpture and paintings. He at once entered the cavern, proceeded forward, and, after overleaping several obstacles, found himself in a sepulchral chamber, in the centre of which stood an alabaster sarcophagus, covered with sculptures. He afterwards examined this sarcophagus, and with immense labour, took exact copies of the drawings, consisting of nearly a thousand figures, and the hieroglyphic inscriptions, amounting to more than five hundred, which he found on the walls of the tomb. It was from these copies that Belzoni formed the representation or model of this tomb, which he afterwards exhibited in London and Paris.

On returning to Cairo from this great discovery, he immediately engaged in a new investigation, which conducted him to another perhaps still more interesting.

He determined to make an attempt to penetrate into one of the pyramids. At length in the pyramid called Cephrenes, he discovered the entrance to a passage which led him into the centre of the structure. Here he found a sepulchral chamber, with a sarcophagus in the middle of it, containing the bones of a bull —a discovery, which has been considered as proving that these immense edifices were in reality erected by the superstition of the old Egyptians for no other purpose than to serve each as a sepulchre for one of their brute divinities.

Encouraged by the splendid success which attended his efforts, and which had made his name famous in all parts of the literary world, Belzoni engaged in various other enterprises of a similar character. He also made several journeys in the remote parts of Egypt, and into the adjoining regions of Africa. He set sail for Europe in September 1819. The first place which he visited was his native city, from which he had been absent nearly twenty years. He presented to the Paduans two lion-headed granite statues, which were placed in a conspicuous situation in the Palace of Justice. A medal was at the same time struck in honour of the giver, on which were inscribed his name and a recital of his exploits. From Italy Belzoni hastened to England, where the rumour of his discoveries had already excited a greater interest than in any other country. In 1820, an account of his travels and discoveries appeared in a quarto volume, with another volume of plates in folio. It soon passed through three editions, while translations of it into French and Italian appeared at Paris and Milan. After this, Bel-

zoni visited successively, France, Russia, Sweden, and Denmark. Returning to England, he undertook, under the auspices of government, the perilous attempt of penetrating into Central Africa. Proceeding to Tangiers, he went from thence to Fez. Unexpected difficulties prevented his advancing in that direction. On this disappointment, he sailed for Madeira, and from thence, in October 1823, he set out forthe mouth of the river Benin, on the western coast of Africa, with the intention of making his way to the interior from that point. A malady, however, attacked him almost as soon as he stepped his foot on shore. He expired at Gato on the 3d of December 1823. His remains were interred on the shore, under a plane tree. An inscription in English was afterwards placed over his grave.

WILLIAM CAXTON.

"The ease which we now find in providing and dispersing what number of copies of books we please by means of the press," says Dr. Middleton in his Free Inquiry, "makes us apt to imagine, without considering the matter, that the publication of books was the same easy affair in all former times as in the present. But the case was quite different. For, when there were no books in the world but what were written out by hand, with great labour and expense, the method of publishing them was necessarily very slow, and the price very dear; so that the rich and curious only would be disposed or able to purchase them; and to

such, also, it was difficult to procure them or to know even where they were to be bought."

Of the truth of these remarks of Dr. Middleton, a great variety of facts might be brought forward in proof. In 1299, the Bishop of Winchester borrowed a Bible, in two volumes, folio, from a convent in that city, giving a bond, drawn up in the most formal and solemn manner, for its due return. This Bible had been given to the convent by a former Bishop, and, in consideration of this gift and one hundred marks, the monks founded a daily mass for the soul of thedonor. In the same century, several Latin Bibles were given to the University of Oxford, on condition that the students who read them should deposit a cautionary pledge. And even after manuscripts were multiplied by the invention of linen paper, it was enacted by the statutes of St. Mary's College, at Oxford, in 1446, that "no scholar shall occupy a book in the library above one hour, or two hours at most, lest others should be hindered from the use of the same." Money was often lent on the deposit of a book; and there were public chests in the universities and other seminaries, in which the books so deposited were kept. They were often particularly named and described in wills, generally left to a relative or friend, in fee, and for the term of his life, and afterwards to the library of some religious house. "When a book was bought," observes Mr. Walton, "the affair was of so much importance, that it was customary to assemble persons of consequence and character, and to make a formal record that they were present on the occasion." The same author adds :—"Even so late as the year 1471, when

Louis XI., of France, borrowed the works of the Arabian physician, Rhasis, from the Faculty of Medicine at Paris, he not only deposited, by way of a pledge, a valuable plate, but was obliged to procure a nobleman to join with him as party in a deed, by which he bound himself to return it, under a considerable forfeiture." Long and violent altercations, and even lawsuits, sometimes took place, in consequence of the disputed property of a book.

Books were so scarce in Spain in the tenth century, that several monasteries had among them only one copy of the Bible, one of Jerome's Epistles, and one of several other religious books. There are some curious instances given by Lupus, abbot of Ferrieris, of the extreme scarcity of classical manuscripts in the middle of the ninth century. He was much devoted to literature, and from his letters appears to have been indefatigable in his endeavours to find out such manuscripts, in order to borrow and copy them. In a letter to the Pope, he earnestly requests of him a copy of Quinctilian, and of a treatise of Cicero; "for," he adds, "though we have some fragments of them, a complete copy is not to be found in France." In two other of his letters, he requests of a brother abbot the loan of several manuscripts, which he assures him shall be copied and returned as soon as possible, by a faithful messenger. Another time he sent a special messenger to borrow a manuscript, promising that he would take very great care of it, and return it by a safe opportunity, and requesting the person who lent it to him, if he were asked to whom he had lent it, to reply, to some near relation of his own, who had been very urgent to

borrow it. Another manuscript, which he seems to have prized much, and a loan of which had been so frequently requested, that he thought of *banishing* it somewhere, that it might not be destroyed or lost, he tells a friend he may perhaps lend him when he comes to see him, but that he will not trust it to the messenger who had been sent for it, though a monk, and trust-worthy, because he was travelling on foot.

Respecting the price of manuscript books, we are not in the possession of many facts. Plato paid one hundred minæ, equal to L.375, for three small treatises by Philolaus, the Pythagorean. After the death of Speusippus, Plato's disciple, his books, few in number, were purchased by Aristotle, for about L.675. It is said, that St. Jerome nearly ruined himself by the purchase of religious works alone. Persons of moderate fortunes could not afford the means of procuring them, nor the rich even without the sacrifice of some luxuries. The mere money which was paid for them in the dark ages, whenever a person distinguished himself for his love of literature, was seldom the sole or the principal expense. It was often necessary to send to a great distance, and to spend much time, in finding out where they were. In the ninth century, an English bishop was obliged to make five journeys to Rome, principally in order to purchase books. For one of his books thus procured, king Alfred gave him an estate of eight hides of land, or as much as eight ploughs could till. About the period of the invention of cotton paper, 1174, the homilies of St. Bede and St. Augustine's Psalter were bought by a prior in Winchester from the monks of Dorchester in Oxford-

shire, for twelve measures of barley and a pall richly embroidered in silver.

Stow informs us, that in 1274, a Bible, in nine volumes, fairly written, with a gloss, or comment, sold for fifty marks, or L.33, 6s. 8d. About this time the price of wheat averaged 3s. 4d. a quarter, a labourer's wages were one and a half pence a day, a harvest-man's, two pence. On a blank page of Comestor's Scholastic History, deposited in the British Museum, it is stated that this manuscript was taken from the king of France, at the battle of Poictiers. It was afterwards purchased by the Earl of Salisbury for a hundred marks, or L.66, 13s. 4d. It was directed, by the last will of his countess, to be sold for forty livres. At this time the king's surgeon's pay was L.5, 13s. 4d. per annum, and one shilling a day besides. Master-carpenters had four pence a day; their servants two pence.

At the beginning of the fourteenth century, some books were bequeathed to Merton College, Oxford, of which the following are the names and valuation. A Scholastic History, twenty shillings; a Concordance, ten shillings; the four greater Prophets, with glosses, five shillings; a Psalter, with glosses, ten shillings; St. Austin on Genesis, ten shillings. About the year 1400, a copy of the Roman *de la Rou* was sold before the palace-gate, at Paris, for L.33, 6s. 6d. The countess of Anjou paid for a copy of the homilies of Bishop Haiman, two hundred sheep, five quarters of wheat, five quarters of barley, and five quarters of millet. On the conquest of Paris, in 1425, the Duke of Bedford sent the royal library to England. It con-

sisted of only eight hundred and fifty-three volumes, but it was valued at more than two thousand two hundred pounds sterling. Further facts of a similar character will be found in the life of the individual to which we now proceed.

William Caxton was born in the weald of Kent, England, about the year 1412. At this period learning of all kinds was in a much more depressed state in England than in most of the continental countries, in consequence, principally, of the civil war in which the nation was embroiled, the habits of restlessness thus produced, and the constant preoccupation of the time and thoughts of men in promoting the cause they espoused, and in protecting their lives and property. Under these circumstances, the most plain and common education was often neglected. Caxton's parents, however, performed their duty to him. "I am bounden," says he, "to pray for my father and mother, that, in my youth sent me to school, by which, by the sufferance of God, I get my living, I hope, truly."

When he was about fifteen or sixteen, he was put an apprentice to William Large, a mercer of London, and afterwards mayor. The name *mercer* was given at that time to general merchants, trading in all kinds of goods. After he had served his apprenticeship, Caxton took up his freedom in the mercer's company, and became a citizen of London. Some subsequent years he spent in travelling in various countries on the continent of Europe. In 1464, he was appointed ambassador to the court of the Duke of Burgundy. During his residence in the Low Countries, he acquired or perfected his knowledge of the French lan-

guage, gained some knowledge of Flemish or Dutch, imbibed a taste for literature and romance, and, at great expense, made himself master of the art of printing.

About 1472, Caxton returned to England, and introduced, in all probability, the art of printing into that country. The common opinion is that the "Game of Chess" was the first book printed by Caxton, though Mr. Dibdin thinks that the "Romance of Jason" was printed before it. Caxton was most indefatigable in cultivating his art. Besides the labour necessarily attached to his press, he translated not fewer than five thousand closely printed folio pages, though well stricken in years. The productions of his press amount to sixty-four. In 1480, he published his Chronicle, and his Description of Britain, which is usually subjoined to it. These were very popular, having been reprinted four times in *this century* and seven times in the *sixteenth century*.

"After divers works," says he, "made, translated and achieved, having no work in hand, I, sitting in my study, where, as lay many divers pamphlets and books, it happened that to my hand came a little book in French, which lately was translated out of Latin, by some noble clerk of France, which book is named 'Æneid,' as made in Latin by that noble person and great clerk, Virgil, which book I saw over, and read therein. (He then describes the contents.) In which book I had great pleasure, by cause of the fair and honest terms and words in French, which I never saw tofore like, ne none so pleasant, ne so well ordered; which book, as me seemed, should be much requisite to noble men to see, as well for the eloquence as his-

tories. And when I had advised me in this said book, I deliberated, and concluded to translate it into English; and forthwith took a pen and ink and wrote a leaf or twain, which I oversaw again, to correct it; and when I saw the fair and strange terms therein, I doubted that it should not please some gentlemen which late blamed me, saying, that in my former translations I had over curious terms, which could not be understood of common people; and desired me to use old and homely terms in my translations; and fain would I satisfy every man, and so to do, took an old book and read therein; and certainly the English was so rude and broad, that I could not well understand it; and also, my lord abbot of Westminster did do show to me late certain evidences, written in old English, for to reduce it into our English now used; and certainly it was written in such wise, that was more like to Dutch than to English. I could not reduce, nor bring it to be understanden. Certainly the language now used varieth far from that which was used and spoken when I was born; for we, Englishmen, been born under the domination of the moon, which is never at rest, but ever wavering. The most quantity of the people understand not Latin nor French in this realm of England."

Caxton seems to have been much puzzled and perplexed about the language he should use in his translations; for, while some advised him to use old and homely terms, others, "honest and great clerks," he adds, "have been with me, and desired me to write the most curious terms that I could find; and thus, betwixt plain, rude, and curious, I stand abashed."

Among the books which Caxton published were two editions of Chaucer's Tales. He seems to have had a veneration for the memory of this poet, and to have formed, with sound judgment and good taste, a most correct and precise estimate of the peculiar merits of his poetry. As a proof of the former, we may mention, that Caxton, at his own expense, procured a long epitaph to be written in honour of Chaucer, which was hung on a pillar near the poet's grave in Westminster Abbey. The following remarks of Caxton show that he was able thoroughly to relish the merits and beauties of Chaucer's poetry. "We ought to give a singular laud unto that noble and great philosopher, Geoffrey Chaucer, the which, for his ornate writings in our tongue, may well have the name of a laureate poet. For tofore, that he embellished and ornated and made fair our English, in this realm was made rude speech and incongruous, as yet appeareth by old books, which at this day ought not to have place, ne be compared unto his beauteous volumes and ornate writings, of whom he made many books and treatises of many a noble history, as well in metre as in rhyme and prose; and then so craftily made, that he comprehended his matters in short, quick, and high sentences, eschewing perplexity; casting away the chaff of superfluity, and showing the picked grain of sentence, uttered by crafty and *sugared eloquence.* In all his works he excelled, in mine opinion, all writers in our English, for he writeth no void words, but all his matter is full of high and quick sentence, to whom ought to be given laud and praise for his noble making and writing."

Caxton died in 1490–1, was buried in St. Margaret's, and left some books to that church. "His character," says his biographer, "may be collected from the account we have given of his labours. He was possessed of good sense and sound judgment; steady, persevering, active, zealous, and liberal in his services for that important art which he introduced into England, labouring not only as a printer, but as translator and editor."

JOHN LEYDEN.

When Sir Walter Scott was engaged in preparing his "Border Minstrelsy," he accidentally met with a coadjutor in a quarter where he least expected it. There might be often seen at that time (it was the year 1800), in the small book-shop of Mr. Constable, at Edinburgh, a young man of uncouth "aspect and gestures," poring over the *ancient* volumes of that repository, "balanced on a ladder with a folio in his hand, like Dominie Sampson." A friend of Sir Walter, who visited this shop for the sake of discovering whatever in it could be of any assistance in the forthcoming work, fell into conversation with this stranger, and soon discovered that his mind was crowded with all sorts of learning, and especially that he was familiar with the early Scottish legends, traditions, and ballads. The young man was John Leyden, some of whose productions in verse, principally translations from the Greek, Latin, and Northern European languages, published in the

Edinburgh Magazine, had for several years excited interest and curiosity. He was soon numbered among the friends of the great Scottish poet and novelist, and continued in intimate connection with him, until his early death.

JOHN LEYDEN was born at Denholm, a small village of Roxburghshire, Scotland, on the 8th of September 1775. His father was a farmer, of simple manners and irreproachable life. Shortly after the birth of this son, his parents removed to a cottage belonging to his mother's uncle, where they lived for sixteen years. The family was humble, but cheerful, contented, and intelligent. Leyden was taught to read by his grandmother, who resided in the family. His great eagerness for learning early began to manifest itself. The histories of the Bible attracted his attention, and he soon learned every important event mentioned in the Old and the New Testaments.

There were few books in the cottage except the Bible, and such others as were common to the Scottish peasants; but his young mind was strongly excited by the ballads and legends of the country, and by the stories recited to him by a blind uncle of his mother. He was ten years old before he went to school, and even then his opportunities for learning were very small. The school-house was two miles from his father's cottage; and the school was broken up, soon after he began to attend it, by the death of its master. But, during this short period of study, he had learned something, and his mind was roused to activity. For want of other subjects to dwell upon, he became more and more deeply interested in the traditions of the

country. The romantic and superstitious tales of the nursery, became food to his mind. When he was eleven years old, a companion gave him some account of an odd volume of the "Arabian Nights' Entertainments," which belonged to a blacksmith's apprentice, who lived some miles distant. It was winter; but the boy's mind, full of the wonders he had heard, could only be satisfied with a sight of the wonderful volume. He started early in the morning, and almost at daybreak reached the blacksmith's shop. The apprentice was not at home, and he was obliged to travel still further to find him. He requested the privilege of reading the book in presence of the owner, for to borrow so great a treasure was more than he could expect. His humble request was refused. The little boy could not, however, give up his cherished hopes; and he actually stood all day beside the ungenerous apprentice, till the lad, ashamed of his own churlishness or worn out by Leyden's perseverance, actually gave him the book. He had suffered hunger and fatigue, but he had gained his treasure. Perhaps, according to the suggestion of Sir Walter Scott, "these fascinating tales, obtained with so much difficulty, may have given his mind that decided turn towards oriental learning, which was displayed through his whole life, and illustrated by his regretted and too early decease."

Another teacher came to the school, and taught him a smattering of Latin; another still, gave him a little knowledge of arithmetic. In the meantime, his desire for learning became so great, that his parents determined, if possible, to educate him, intending that he

should one day become a minister in the Scottish church. He was accordingly placed for two years under the charge of Mr. Duncan, a Cameronian minister at Denholm. In November, 1790, with "little Latin, and less Greek," he entered the University at Edinburgh. To the well-educated and well-bred students of the University, he was an object of curiosity and of some merriment. Professor Dalzel used to say, that he had seldom known any young man who at first appeared worse prepared for college, and who so speedily surmounted the difficulties under which he had laboured. When he first rose to recite, his rustic air, his undaunted manner, his high harsh voice, his provincial accent, provoked the laughter of the class, and nearly destroyed the gravity of the professor. It was soon perceived, however, that he had acquired a vast store of information; and although, in his processes of study, he had not thought it necessary to become master of grammatical rules, his strength and acuteness of mind soon made themselves felt. To every branch of learning he applied himself with most determined resolution. The Greek language was his favourite, and he became familiar with its best authors. Besides the ordinary college studies, he plunged with great ardour into whatever others happened to attract his attention. It was his habit to devote himself with his whole soul, for the time being, to whatever he undertook, until he had in some measure mastered its difficulties, and had become so familiar with it, that at a future time he could pursue it with apparent ease. He used to say, when objections were made to the miscellaneous nature of his studies—"Never mind;—

if you have the scaffolding ready, you can run up the masonry when you please." It must not, however, be inferred that because his retentive memory could thus accomplish much, the same method would be best for another. By his perseverance and strong determination, he became acquainted not only with Greek and Latin, but with French, Spanish, Italian, German, and Icelandic; and also studied Hebrew, Arabic, and Persian.

Although he possessed so decided a talent for the acquisition of languages, he engaged eagerly in various other branches of study. Mathematics was the only one for which he had little taste, and in which he made the least advance. His vacations, which occured in the summer, he spent at home; reviewing and arranging, somewhat more methodically, what he had acquired during the winter at the University. He fitted up a sort of furnace for chemical experiments in a secluded part of the glen, near the village; but his chief place of study (his father's cottage not being large enough to afford him any) was the village church. Into this singular retirement he found his way through an open window: a retired pew served as a depository of his library and cabinet of curious specimens; and the sacredness of the place, as well as certain superstitious fears connected with it, to which Leyden now and then added some new element by means of tradition or story, preserved him from disagreeable intrusions.

The number of his books was small, and the country society, congenial to him, very restricted. Froissart's Chronicles, which he found in the library of a neigh-

bouring gentleman, was an inestimable treasure. At college he gradually became intimate with the best scholars, among whom was the poet Campbell. After spending five or six years at Edinburgh, through the kindness of Professor Dalzel, he obtained a situation as a private tutor in a gentleman's family, which he retained until, in 1798, he accompanied two young gentlemen to the University of St. Andrew's.

The secluded situation, the great antiquity, and the decayed splendour of this northern seat of learning, quite suited his fancy; while its rich libraries gave him the opportunity of pursuing his favourite studies. While at St. Andrew's, the fame of Mungo Park, whose travels had just become known, excited his interest in Africa. He was fascinated by the strangeness of the stories which he heard of that singular country, and devoted himself for a time to study its antiquities and history. As a result of his inquiries, he published, in 1799, an octavo volume, entitled "A Historical and Philosophical Sketch of the Discoveries and Settlements of the Europeans in Northern and Western Africa, at the close of the eighteenth century." He subsequently proposed to extend this to four volumes, and had made preparations for the purpose, and even completed arrangements for publishing it with Messrs. Longman & Co., when other events changed entirely the course of his life. The volume which was published, he wrote in about six weeks, and that too when his health was not very good. During the same period of his life, he was writing articles for the New London Review, and occasionally sending to the Edinburgh Magazine those short poems, translated

from various languages, to which reference was made at the beginning of this sketch.

The winter of 1799–1800, he spent in Edinburgh, where he greatly enlarged the circle of his literary acquaintance, while he still pursued his studies with the utmost devotion. His abstemiousness was remarkable. He seemed to have no need of food, often during the entire day eating nothing but a morsel of bread; and being almost as indifferent to sleep. When interrupted during the day by the demands of society, he would make up the deficiency by studying nearly all the night. His pecuniary resources were very small; but, with a noble resolution, he preserved his independence by severe economy. Never in his life did wealth seem to have peculiar charms for him, nor poverty its usual evils. In 1800, he was ordained as a minister in the Scottish church; but neither his habits nor character fitted him for the sacred calling. He never entered upon its solemn duties farther than to preach a few sermons. With greater zeal he devoted himself to literature. He made a tour to the Highlands and the Hebrides, and "investigated the decaying traditions of Celtic manners and story, which are yet preserved in the Wild districts of Moidart and Knoidart."

Having become acquainted with Sir Walter Scott, as before suggested, just as that poet was preparing his "Minstrelsy of the Scottish Border," he entered into the publication with characteristic zeal, inspired not only by his friendship for Sir Walter, but by his native love of the subject, and patriotic attachment to Scotland. "An interesting fragment," says Scott, "had

been obtained of an ancient historical ballad; but the remainder, to the great disturbance of the editor and his coadjutor, was not to be recovered. Two days afterwards, while the editor was sitting with some company after dinner, a sound was heard at a distance like that of the whistling of a tempest through the torn rigging of a vessel which scuds before it. The sounds increased as they approached nearer, and Leyden (to the great astonishment of such of the guests as did not know him) burst into the room, chanting the desiderated ballad, with the most enthusiastic gestures, and all the energy of the *saw-tones* of his voice. It turned out that he had walked between forty and fifty miles, and back again, for the sole purpose of visiting an old person who possessed this precious remant of antiquity."

In 1801, he published a new edition of an old tract, called the "Complaynt of Scotland." This singular production of the early part of the sixteenth century treats of the public and private life of Scotland, its poetry, music, and learning; and gave Leyden an opportunity, in a preliminary dissertation and by notes, to show his abundant stores of antiquarian knowledge. "The intimate acquaintance which he has displayed with Scottish antiquities of every kind, from manuscript histories and rare chronicles down to the tradition of the peasant, and the rhymes even of the nursery, evince an extent of research, power of arrangement, and facility of recollection, which has never been equalled in this department."

He also wrote a poem, entitled "Scenes of Infancy," which was afterwards published, and in which he com-

memorates the circumstance of his own youth, and the traditions of his native vale of Teviot. In the meantime he became filled with a desire to travel: to extend the boundaries of geographical and literary knowledge became, he said, "his thought by day, and his dream by night, and the discoveries of Mungo Park haunted his very slumbers." He actually began to correspond with the African Society, with a view to explore, under their auspices, the interior of those inhospitable regions which have been the grave of so many enterprising travellers.

When his serious purpose became fully known to his friends, they felt extremely anxious to divert him from the project. They thought that his enthusiasm and ability to acquire foreign languages would find ample scope in the British East Indies, and accordingly applied to those in power for an appointment. Through the kindness of Mr. Dundas, one was promised; but the only place at his disposal was that of surgeon's assistant. This could only be held by one who had a medical degree, and who should pass a satisfactory examination before the medical board of the India House. Only six months were wanting before the examination must take place. Leyden was not discouraged. His determination rose in proportion as the attempt seemed formidable. What would have utterly appalled another, inspired him with fresh zeal. After incredible exertion, the task was accomplished. He received his diploma as surgeon at Edinburgh, and the degree of M.D. at St. Andrews.

Leyden's fame as a scholar was now extended wide, and he numbered among his acquaintances and friends

many men in the kingdom of high note as statesmen, poets, and scholars. Among the scholars was Alexander Murray; among the future statesmen was Brougham; among the poets, Sir Walter Scott. In December 1802, he received orders to join the fleet of Indiamen. He immediately went to London, but, from over exertion and anxiety of mind, found himself unable to join the ship to which he was destined. It was fortunate for him that it was so, as the vessel was wrecked in going down the river, and a large number of the passengers were drowned. In consequence of this event and the changes attendant upon it, he did not sail until April 1803, when he bade farewell to England, never to see her again. "Thus set forth on his voyage," says Sir Walter Scott, "perhaps the first British traveller that ever sought India, moved neither by the love of wealth nor of power; and who, despising alike the luxuries commanded by the one, and the pomp attached to the other, was guided solely by the wish of extending our knowledge of Oriental literature, and distinguishing himself as its most successful cultivator." His commission as surgeon was but a cover to the learned pursuits in which he so vigorously engaged.

Soon after his arrival in India, he was attached to a commission for surveying the districts of the Mysore, and began to form some deliberate plan for active exertion. "There were but two routes," he says in a letter, "in a person's choice; first, to sink into a mere professional drudge, and, by strict economy, endeavour to collect a few thousand pounds in the course of twenty years; or, secondly, to aspire beyond it, and,

by superior knowledge of India, its laws, relations, politics, and languages, to claim a situation somewhat more respectable." The difficulties were greater than he anticipated. His pay was small; his expenses in prosecuting his studies, large. Still he persevered, and, besides performing his duties as surgeon, marching by day and night in a hot climate, and attending to the hospital, he devoted more or less attention to the "Arabic, Persic, Hindostani, Mahratta, Tamal, Telinga, Canara, Sanscrit, Malayalam, Malay, and Armenian." It is no wonder that his health, before long, gave way under this pressure of labour. After trying various situations in the Presidency of Madras, he concluded to sail for the Prince of Wales Island. Although thus disappointed, he was in no manner disheartened, and wrote to his friends in a style of gay exaggeration, which exhibited the perfect buoyancy of his spirits. After describing his studies and labours, he goes on: "To what I have told you, you are to add constant and necessary exposure to the sun, damps and dews from the Ganges, and putrid exhalations of marshes, before I had been properly accustomed to the climate; constant rambling in the haunts of tigers, leopards, bears, and serpents of thirty or forty feet long, that make nothing of swallowing a buffalo, by way of demonstrating their appetite in a morning; together with smaller and more dangerous snakes, whose haunts are perilous, and bite deadly; and you have a faint idea of a situation, in which, with health, I lived as happy as the day was long. It was occasionally diversified with rapid jaunts of a hundred miles or so, as fast as horse or bearers could carry me, by night or day—swimming

through rivers—afloat in an old brass kettle at midnight!—O, I could tell you adventures to outrival any witch that ever swam in egg-shell or sieve; but you would undoubtedly imagine I wanted to impose on you, were I to relate what I have seen and passed through. No! I certainly shall never repent of having come to India. It has awakened energies in me that I scarcely imagined that I possessed."

At Puloo Penang (or Prince of Wales Island) his time did not pass unoccupied. He visited the coasts of Sumatra and the Malayan peninsula, and picked up the materials for an essay, published in the 10th vol. of the "Asiatic Researches," on the "Languages and Literature of the Indo-Chinese Nations."

Although much occupied while at this island, his spirits were sometimes much depressed, as seems evident from certain lines which he wrote for New Year's day, 1806. The last two stanzas are the following:—

> "Friends of my youth, for ever dear,
> Where are you from this bosom fled?
> A lonely man I linger here,
> Like one that has been long time dead.
>
> Foredoomed to seek an early tomb,
> For whom the pallid grave-flowers blow,
> I hasten on my destined doom,
> And sternly mock at joy or woe!"

In 1806, he removed from Penang to Calcutta, and, through the influence of Lord Minto, was appointed a professor in the Bengal College; but soon after was made Judge, and was thus called to act in a judicial capacity among the natives, for which his knowledge of their language, manners, and customs, well fitted

him. He had now a considerable salary; but, after remitting a part to his father in Scotland, he devoted the remainder entirely to advance his acquaintance with Eastern literature. He avoided the expensive establishments and ordinary luxuries of the East, and remained, as he was in Scotland, a frugal, patient scholar.

In 1809, he was appointed Commissioner of the Court of Requests in Calcutta; and in the following year, having resigned this office, he obtained that of Assay-Master of the Mint. In 1811, the British Government having undertaken an expedition against the island of Java, Dr. Leyden was called to accompany Lord Minto, both that he might investigate the manners, language, and literature of the tribes on the island, and because it was thought that his extensive knowledge of Eastern life might be of importance to the Governor-General in negociations with the natives. When they reached the island, his enthusiastic desire of being the first Briton who should land, led him to throw himself into the surf, and thus reach the shore among the foremost. Immediately afterwards, as soon as the troops took possession of Batavia, he hastened to examine a collection of Indian manuscripts, stored in a large warehouse. On leaving the ill-ventilated apartment, he was attacked with a fit of shivering. This was the premonitory stroke of the fever. In three days he was no more.

Thus died, August 21, 1811, at the early age of thirty-six, one whose literary promise was great, and whose actual performance was considerable. He aimed at accomplishing more in the way of Oriental

learning than any who had preceded him in that difficult field. Had he lived, he would probably, with his industry and enthusiasm, have attained the goal of his wishes. But his extraordinary zeal led him to be careless of the means of preserving life and health. When at Mysore, shortly after his arrival from England, he was so ill that his physician despaired of his life; but the endeavours of his friends to induce him to relax his studies were vain. "When unable to sit up, he used to prop himself up with pillows, and continue his translations. One day General Malcolm came in, and the physician said to him, 'I am glad you are here; you will be able to persuade Leyden to attend to my advice. I have told him before, and now I repeat, that he will die if he does not leave off his studies and remain quiet.' 'Very well, Doctor,' exclaimed Leyden, 'you have done your duty, but you must now hear me; *I cannot be idle*, and whether I die or live, the wheel must go round to the last;' and he actually continued, under the depression of a fever and a liver-complaint, to study more than ten hours each day." His great abstemiousness doubtless contributed greatly to his usual good health.

His method of studying was somewhat singular. The following account is from the pen of General Sir John Malcolm:—"It is not easy to convey an idea of the method which Dr. Leyden used in his studies, or to describe the unconquerable ardour with which these were pursued. During his early residence in India, I had a particular opportunity of observing both. When he read a lesson in Persian, a person near him, whom he had taught, wrote down each word on a long slip of

paper, which was afterwards divided into as many pieces there were words, and pasted in alphabetical order, under different heads of verbs, nouns, &c., into a blank book that formed a vocabulary of each day's lesson. All this he had, in a few hours, instructed a very ignorant native to do ; and this man he used, in his broad accent, to call 'one of his mechanical aids.'" —"His memory was most tenacious, and he sometimes loaded it with lumber. When he was at Mysore, an argument occurred upon a point of English history : it was agreed to refer it to Leyden, and, to the astonishment of all parties, he repeated verbatim the whole of an act of parliament in the reign of James, relative to Ireland, which decided the point in dispute. On being asked how he came to charge his memory with such extraordinary matter, he said that several years before, when he was writing on the changes which had taken place in the English language, this act was one of the documents to which he had referred as a specimen of the style of that age, and that he had retained every word in his memory."

In his manners he was eccentric and rough, and he often trespassed against the outward laws of ceremony. His voice was harsh ; and in conversation, especially in argument, he used it in its loudest key, and never hesitated to express himself in the most vigorous language. But his defects were atoned for by great virtues. His temper "was mild and generous, and he could bear with perfect good humour, raillery on his foibles." He was full of good humour, kindness, and magnanimity, and, with all his boldness, never intentionally wounded the feelings of others. He won the

undoubted love of many men of great minds, and was favoured with the friendship of women of high culture and refinement. "No man," says Lord Minto, "whatever his condition might be, ever possessed a mind so entirely exempt from every sordid passion, so negligent of fortune, and all its grovelling pursuits,—in a word, so entirely disinterested,—nor ever owned a spirit more firmly and nobly independent."

His literary and poetical works have been published since his death. In 1826, the "Memoirs of Baber,"* chiefly translated by him, and completed by his friend William Erskine, were published for the benefit of his father. His literary property was committed to the care of Mr. Heber. When Sir John Malcolm visited Lord Minto, in Roxburghshire, he inquired for the elder Leyden, and, in the course of the conversation with him, he expressed his regret at the delays in realizing the small property of the son; and "remarked that he was authorized by Mr. Heber to say, that such manuscripts as were likely to produce a profit should be published as soon as possible for the benefit of his family." "Sir," said the old man with animation and with tears in his eyes, "God blessed me with a son, who, had he been spared, would have been an honour to his country! As it is, I beg of Mr. Heber in any publication he may intend, to think more of *his* memory than of *my* want. The money you speak of would be a great comfort to me in my old age; but, thanks be to the Almighty, I have good health and can still earn my

* An interesting account of this remarkable work, written in the early part of the 16th century, may be found in the Edinburgh Review, for June, 1827.

livelihood; and I pray therefore of you and Mr. Heber to publish nothing that is not for my son's good fame." One can hardly find, in the lower or the higher walks of life the expression of a more delicate and tender regard for the good name of a departed friend.

Leyden was remembered with great affection by his friends, and by few with more sincerity and warmth of feeling than by Scott, who gives a brief tribute to his memory in "The Lord of the Isles."

> "The clans of Jura's rugged coast
> Lord Ronald's call obey,
> And Scarba's isle, whose tortured shore
> Still rings to Corrievreken's,
> And lonely Colonsay:—
> Scenes sung by him who sings no more!
> His bright and brief career is o'er,
> And mute his tuneful strains;
> Quenched is his lamp of varied lore,
> That loved the light of song to pour;
> A distant and a deadly shore
> Has Leyden's cold remains."
>
> *Lord of the Isles.—Canto* 4, *st.* 11.

WILLIAM EDWARDS.

William Edwards, the celebrated Welsh engineer, was born in 1719, in the parish of Eglwysan, in Glamorganshire. He lost his father, who was a farmer, when he was only two years old; but his mother continued to hold the farm, and was in this manner enabled to bring up her family, consisting of two other sons and a daughter, besides William, who was the youngest. Her other sons, indeed, were soon old enough to take

the chief part of the charge from her hands. William was taught in the meantime to read and write Welsh; and this was all the education which he seems to have received. When about the age of fifteen, he first began to employ himself in repairing the stone fences of the farm; and in this humble species of masonry he soon acquired uncommon expertness. The excellent work he made, and the despatch with which he finished it, at last attracted the notice of the neighbouring farmers; and they advised his brothers to keep him at this business, and let him employ his skill, when wanted, on other farms as well as their own. After this he was for some time constantly engaged; and he regularly added his earnings to the common stock of the family.

Hitherto, the only sort of building which he had practised or had seen practised, was merely stone-masonry without mortar. But at length it happened that some masons came to the parish to erect a shed for shoeing horses, near a smith's shop. William contemplated the operations of these architects with the liveliest interest, and he used to stand by them for hours while they were at work, taking note of every movement which they made. A circumstance which at once struck him, was that they used a different description of hammer from what he had been accustomed to employ; and perceiving its superiority, he immediately procured one of the same kind for himself. With this he found he could build his walls much more neatly than he had been wont to do.

But it was not long after he had, for the first time in his life, an opportunity of seeing how houses were

erected, that he undertook to build one himself. It was a workshop for a neighbour; and he performed his task in such a manner as gained him great applause. Very soon after this, he was employed to erect a mill, by which he still further increased his reputation. He was now accounted the best workman in that part of the country, and being highly esteemed for integrity and fidelity to his engagements, as well as for his skill, he had as much employment in his line of a common builder as he could undertake.

In his twenty-seventh year, however, he was induced to engage in an enterprise of a much more difficult and important character than anything which he had hitherto attempted. Through his native parish runs a river, called the Taff, which flows into the estuary of the Severn. It was proposed to throw a bridge over this river, at a particular spot where it crossed the line of an intended road; but to this design difficulties of a somewhat formidable nature presented themselves, owing both to the great breadth of the river, and the frequent swellings to which it was subject. Mountains covered with wood, rose to a considerable height from both its banks; which first attracted and detained every approaching cloud, and then sent down its contents in torrents to the river. Edwards undertook the task of constructing the proposed bridge, though it was the first work of the kind in which he ever engaged.

Accordingly, in the year 1746, he set to work; and in due time completed a very light and elegant bridge, of three arches, which, notwithstanding that it was the work of both an entirely self-taught and an equally un-

travelled artist, was acknowledged to be superior to anything of the kind in Wales. So far his success had been as perfect as anything which could be desired. But his undertaking was far from being yet finished. He had, both through himself and his friends, given security that the work should stand for seven years; and for two and a half years of this term all went on well. There then occurred a flood of extraordinary magnitude; not only the torrents came down from the mountains, in their accustomed channels, but they brought along with them trees of the largest size, which they had torn up by the roots; and these detained, as they floated along by the middle piers of the bridge, formed a dam there; the waters accumulating behind, at length burst from their confinement, and swept away the whole structure.

This was no light misfortune in every way to poor Edwards; but he did not suffer himself to be disheartened by it, and he immediately proceeded, as his contract bound him to do, to the erection of another bridge. He now determined, however, to span the whole width of the river by a single arch of the unexampled magnitude of one hundred and forty feet from pier to pier. He finished the erection of this stupendous arch in 1751, and had only to add the parapets, when he was doomed once more to behold his bridge sink into the water over which he had raised it,—the extraordinary weight of the masonry having forced up the key-stones, and, of course, at once deprived the arch of what sustained its equipoise.

Heavy as was this second disappointment to the hopes of the young architect, it did not shake his cour-

age any more than the former had done. The reconstruction of his bridge for the third time was immediately begun with unabated spirit and confidence. Still determined to adhere to his last plan of a single arch, he had now thought of an ingenious contrivance for diminishing the enormous weight which had formerly forced the key-stone out of its place. In each of the large masses of masonry, called the *haunches* of the bridge, being the parts immediately above the two extremities of the arch, he opened three cylindrical holes, which not only relieved the central part of the structure from all overpressure, but greatly improved its general appearance in point of lightness and elegance. This bridge was finished in 1755; the whole undertaking having occupied the architect about nine years in all; and it has stood ever since. This bridge, at the time of its erection, was the largest stone arch known to exist in the world.

Since that time, stone arches of extraordinary dimensions have been built,—such as the five arches composing the splendid Pont de Neuilly, over the river Seine, near Paris, the span of each of which is one hundred and twenty-eight feet;—the island-bridge, over the Liffey, near Dublin, which is a single arch one hundred and six feet in width;—the bridge over the Tees, at Winston in Yorkshire, which is also a single arch one hundred and eight feet nine inches in width, was built by John Johnson, a common mason, at a cost of only five hundred pounds;—and the nine elliptical arches, each of one hundred and twenty feet span, forming the magnificent Waterloo bridge, over the Thames, at London. A bridge has recently been

built at Chester, which is the largest single arch in the world, being two hundred feet span. At Bishop's Wearmouth, in the county of Durham, there is a cast-iron bridge over the river Wear, the chord of the arch of which is two hundred and forty feet long. The Southwark or Trafalgar bridge, over the Thames, at London, is at present the finest iron bridge in the world. It consists of three arches; the chord of the middle arch is two hundred and forty feet long. There is a *timber* bridge over the Delaware, near Trenton, N. J., which is the segment of a circle three hundred and forty-five feet in diameter. The wooden bridge over the Schuylkill, at Philadelphia, was of the extraordinary span of three hundred and forty feet; but having been destroyed by fire, a few years since, it is now replaced by a splendid one of *wire*. The bridge over the Piscataqua, near Portsmouth, N. H., is the segment of a circle six hundred feet in diameter.

The bridge built by Edwards, over the Taff, buttressed as it is at each extremity by lofty mountains, while the water flows in full tide beneath it at the distance of thirty-five feet, presents an aspect very striking and magnificent. This bridge spread the fame of Edwards over all the country. He afterwards built many bridges in South Wales, having their arches formed of segments of much larger circles, and consequently much more convenient. He found his way to this improvement entirely by his own experience and sagacity; as indeed he may be said to have done in regard to all the knowledge which he possessed in his art. Even his principles of common masonry, he used himself to declare, he learned chiefly from his studies

among the ruins of an old gothic castle in his native parish.

Edwards was, likewise, a farmer to the end of his days. Such, moreover, was his unwearied activity that, not satisfied with his weekday labours in these two capacities, he also officiated on the Sabbath as pastor of an Independent congregation, having been regularly ordained to that office when he was about thirty years of age, and holding it till his death. He accepted the usual salary from his congregation, considering it right that they should support their minister; but instead of putting the money into his own pocket, he returned it all, and often much more, in charity to the poor. He always preached in Welsh, though early in life he had made himself acquainted with the English language, having acquired it under the tuition of a blind old schoolmaster, in whose house he once lodged for a short time, while doing some work at the county-town of Cardiff. In this effort he showed all his characteristic assiduity.

He died in 1789, in the seventieth year of his age. His eldest son, David, became also an eminent architect and bridge-builder, though he had no other instruction in his profession than what his father had given him. David's eldest son, also, inherited the genius of his father and grandfather.

JOHN OPIE.

John Opie was born in the parish of St. Agnes, about seven miles from Truro, in the county of Cornwall, England, in 1761. His father and grandfather were carpenters. John appears to have been regarded among his rustic companions as a kind of parochial wonder, from his early years. At the age of twelve, he had mastered Euclid, and was considered so skilful in arithmetic and penmanship, that he commenced an evening school for the instruction of the peasants of the parish of St. Agnes. His father, a plain mechanic, seems to have misunderstood all these indications of mental superiority, and wished him to leave the pen for the plane and saw; and it would appear that his paternal desires were for some time obeyed, for John at least accompanied his father to his work; but this was when he was very young, and it seems probable that he disliked the business, since his father had to chastise him for making ludicrous drawings, with red chalk, on the *deals* which were planed for use.

His love of art came upon him early. When he was ten years old, he saw Mark Oates, an elder companion, and afterwards captain of marines, draw a butterfly; he looked anxiously on, and exclaimed, "I think I can draw a butterfly as well as Mark Oates;" he took a pencil, tried, succeeded, and ran breathless home to tell his mother what he had done. Soon afterward he saw a picture of a farmyard in a house in Truro, where his father was at work; he looked and

looked—went away—returned again and looked—and seemed unwilling to be out of sight of this prodigy. For this forwardness, his father gave him a sharp chastisement—but the lady of the house interposed, and gave the boy another sight of the picture. On returning home, he procured cloth and colours, and made a copy of the painting, from memory alone. He likewise attempted original delineation from life ; and, by degrees, hung the humble dwelling round with likenesses of his relatives and companions, much to the pleasure of his uncle, a man with sense and knowledge above his condition, but greatly to the vexation of his father, who could not comprehend the merit of such an idle trade.

He was employed for some time, in the family of Dr. Wolcot, the satirist, as a menial servant. How long he remained in that employment is not known. He commenced portrait painting, by profession, very early in life. He used to wander from town to town in quest of employment. "One of these expeditions," says his biographer, "was to Padstow, whither he set forward, dressed as usual in a boy's plain short jacket, and carrying with him all proper apparatus for portrait painting. Here, among others, he painted the whole household of the ancient and respectable family of Prideaux, even to the dogs and cats of the family. He remained so long absent from home, that some uneasiness began to arise on his account, but it was dissipated by his returning, dressed in a handsome coat, with very long skirts, laced ruffles, and silk stockings. On seeing his mother he ran to her, and taking out of his pocket twenty guineas which he had

earned by his pencil, he desired her to keep them, adding, that in future he should maintain himself."

For his mother he always entertained the deepest affection, and neither age nor the pressure of worldly business diminished his enthusiasm in the least. He loved to speak of the mildness of her nature and the tenderness of her heart, of her love of truth and her maternal circumspection. He delighted to recall her epithets of fondness, and relate how she watched over him when a boy, and warmed his gloves and great coat in the winter mornings, on his departure for school. This good woman lived to the age of ninety-two, enjoyed the fame of her son, and was gladdened with his bounty.

Of those early efforts, good judges have spoken with much approbation; they were deficient in grace, but true to nature, and remarkable for their fidelity of resemblance. He painted with small pencils, and finished more highly than when his hand had attained more mastery. His usual price, when he was sixteen years of age, was seven shillings and sixpence for a portrait. But of all the works, which he painted in those probationary days, that which won the admiration of the good people of Truro most, was a parrot walking down his perch; all the living parrots that saw it, acknowledged the resemblance. So much was he charmed with the pursuit and his prospects, that when Wolcot asked him how he liked painting? "Better," he answered, "than bread and meat."

In the twentieth year of his age he went to London, and under the patronage of Wolcot, at first excited great attention. Of his success, Northcote gives the

following account. "The novelty and originality of manner in his pictures, added to his great abilities, drew an universal attention from the connoisseurs, and he was immediately surrounded and employed by all the principal nobility of England. When he ceased, and that was soon, to be a novelty, the capricious public left him in disgust. They now looked out for his defects alone, and he became, in his turn, totally neglected and forgotten; and, instead of being the sole object of public attention, and having the street where he lived so crowded with coaches of the nobility as to become a real nuisance to the neighbourhood, 'so,' as he jestingly observed to me, 'that he thought he must place cannon at the door to keep the multitude off from it,' he now found himself as entirely deserted as if his house had been infected with the plague. Such is the world!" His popularity, however, continued rather longer than this description would seem to imply. When the wonder of the town began to abate, the country came gaping in; and ere he had wearied both, he had augmented the original thirty guineas with which he commenced the adventure, to a very comfortable sum; had furnished a house in Orange Court, Leicester Fields. The first use which he made of his success, was to spread comfort around his mother; and then he proceeded with his works and studies like one resolved to deserve the distinction which he had obtained. His own strong natural sense, and powers of observation, enabled him to lift the veil which the ignorant admiration of the multitude had thrown over his defects; he saw where he was weak, and laboured most diligently to improve

himself. His progress was great, and visible to all, save the leaders of taste and fashion. When his works were crude and unstudied, their applause was deafening ; when they were such as really merited a place in public galleries, the world, resolved not to be infatuated twice with the same object, paid them a cold, or at least, a very moderate attention. " Reynolds," it has been remarked, " is the only eminent painter who has been able to charm back the public to himself after they were tired of him." The somewhat rough and unaccommodating manners of Opie were in his way ; it requires delicate feet to tread the path of portraiture ; and we must remember that he was a peasant, unacquainted with the elegance of learning, and unpolished by intercourse with the courtesies and amenities of polite life. He was thrown into the drawing-room, rough and rude as he came from the hills of Cornwall, and had to acquit himself as well as he could.

He divided his time between his profession and the cultivation of his mind. He was conscious of his defective education ; and, like Reynolds, desired to repair it by mingling in the company of men of learning and talent, and by the careful perusal of the noblest writers. " Such were the powers of his memory that he remembered all he had read. Milton, Shakspeare, Dryden, Pope, Gray, Cowper, Butler, Burke, and Dr. Johnson, he might, to use a familiar expression, be said to know by heart." A man of powerful understanding and ready apprehension, " who remembered all he read," and who had nine of the greatest and most voluminous of our authors by heart, could never

be at any loss in company, if he had tolerable skill in using his stores. To his intellectual vigour we have strong testimony. "Mr. Opie," said Horne Tooke, "crowds more wisdom into a few words than almost any man I ever knew; he speaks, as it were, in axioms, and what he observes is worthy to be remembered." "Had Mr. Opie turned his powers of mind," says Sir James Mackintosh, "to the study of philosophy, he would have been one of the first philosophers of the age. I was never more struck than with his original manner of thinking and expressing himself in conversation; and had he written on the subject, he would, perhaps, have thrown more light on the philosophy of his art than any man living."

The chief excellence of Opie lies in portrait painting. He has great vigour, breadth, and natural force of character. His portrait of Charles Fox has been justly commended, nor does the circumstance of his having completed the likeness from the bust by Nollekens, as related by Smith, diminish his merit. When Fox, who sat opposite to Opie at the academy dinner, given in the exhibition-room, heard the general applause which his portrait obtained, he remembered that he had given him less of his time than the painter had requested, and said across the table, "There, Mr. Opie, you see I was right; everybody thinks it could not be better. Now, if I had minded you, and consented to sit again, you most probably would have spoiled the picture."

"He painted what he saw," says West, "in the most masterly manner, and he varied little from it. He saw nature in one point more distinctly and forcibly

than any painter who ever lived. The truth of colour, as conveyed to the eye through the atmosphere, by which the distance of every object is ascertained, was never better expressed than by him. He distinctly represented local colour in all its various tones and proportions, whether in light or in shadow, with a perfect uniformity of imitation. Other painters frequently made two separate colours of objects in light and in shade,—Opie never. With him no colour, whether white, black, primary, or compound, ever, in any situation, lost itsrespective hue."

His works were not the offspring of random fits of labour after long indulgence in idleness, they were the fruit of daily toil, in which every hour had its allotted task. "He was always in his painting-room," says his wife, Amelia Opie, "by half-past eight o'clock in winter, and by eight in summer; and there he generally remained closely engaged in painting till half-past four in winter, and till five in summer. Nor did he allow himself to be idle when he had no pictures bespoken, and as he never let his execution rust for want of practice, he, in that case, either sketched out designs for historical or fancy pictures, or endeavoured, by working on an unfinished picture of me, to improve himself by incessant practice in that difficult branch of art, female portraiture. Neither did he suffer his exertions to be paralyzed by neglect the most unexpected, and disappointment the most undeserved."

"During the nine years that I was his wife," says Mrs. Opie, "I never saw him satisfied with any one of his productions; and often, very often, have I seen

him enter my sitting-room, and, in an agony of despondence, throw himself on the sofa, and exclaim :—'I am the most stupid of created beings, and I never, never shall be a painter as long as I live.' He used to study at Somerset House, where the pictures were hung up, with more persevering attention and thirst for improvement than was ever exhibited, perhaps, by the lowest student in the schools, and on his return, I never heard him expatiate on his own excellences, but sorrowfully dwell on his own defects."

When Henry Fuseli was made keeper of the Royal Academy, Opie was elected to the professorship of painting. He gave four lectures, which contain many discriminating remarks and valuable thoughts, though they are deficient in deep discernment and an original grasp of mind. The following passage embodies important hints, not only for young artists, but for every young man who is aspiring to usefulness in any situation of life :—

"Impressed as I am at the present moment, with a full conviction of the difficulties attendant on the practice of painting, I cannot but feel it also my duty to caution every one who hears me, against entering into it from improper motives and with inadequate views of the subject ; as they will thereby only run a risk of entailing misery and disgrace on themselves and their connections during the rest of their lives. Should any student therefore happen to be present who has taken up the art, on the supposition of finding it an easy and amusing employment—any one who has been sent into the academy by his friends, with the idea that he may cheaply acquire an honourable and profitable profes-

sion—any one who has mistaken a petty kind of imitative monkey talent for genius—any one who hopes by it to get rid of what he thinks a more vulgar or disagreeable situation, to escape confinement at the counter or desk—any one urged merely by vanity or interest, or, in short, impelled by any consideration but a real and unconquerable passion for excellence—let him drop it at once, and avoid these walls and everything connected with them as he would the pestilence ; for if he have not this unquestionable liking, in addition to all the requisites above enumerated, he may pine in indigence, or pass through life as a hackney likeness-taker, a copier, a drawing-master or pattern-drawer to young ladies, or he may turn picture-cleaner, and help time to destroy excellences which he cannot rival, but he must never hope to be in the proper sense of the word, a painter.

" He who wishes to be a painter, must overlook no kind of knowledge. He must range deserts and mountains for images, picture upon his mind every tree of the forest and flower of the valley, observe the crags of the rock and the pinnacles of the palace, follow the windings of the rivulet, and watch the changes of the clouds ; in short, all nature, savage or civilized, animate or inanimate, the plants of the garden, the animals of the wood, the minerals of the mountains, and the motions of the sky, must undergo his examination. Whatever is great, whatever is beautiful, whatever is interesting, and whatever is dreadful, must be familiar to his imagination, and concur to store his mind with an inexhaustible variety of ideas ready for association on every possible occasion, to embellish sentiment and

to give effect to truth. It is, moreover, absolutely necessary that then the epitome of all—his principal subject and his judge—should become a particular object of his investigation ; he must be acquainted with all that is characteristic and beautiful, both in regard to his mental and bodily endowments ; must study their analogies, and learn how far moral and physical excellence are connected and dependent one on the other. He must farther observe the power of the passions in all their combinations, and trace their changes, as modified by constitution or by the accidental influences of climate or custom, from the sprightliness of infancy to the despondency of decrepitude ; he must be familiar with all the modes of life ; and, above all, endeavour to discriminate the essential from the accidental, to divest himself of the prejudices of his own age and country, and, disregarding temporary fashions and local taste, learn to see nature and beauty in the abstract, and rise to general and transcendental truth, which will always be the same." These are noble sentences, and worthy of the regard of those who *paint the mind*, who are employed in intellectual portraiture, and whose work is to survive all material fabrics.

Mr. Opie died on the ninth day of April, 1807. During his sickness he imagined himself to be occupied in his favourite pursuit, and continued painting in idea, till death interposed. He was interred in St. Paul's cathedral, near Sir Joshua Reynolds.

"In person," says Allan Cunningham, from whom we have compiled the preceding biography, "Opie looked like an inspired peasant. Even in his more courtly days there was a country air about him, and

he was abrupt in his language and careless in his dress without being conscious of either. His looks savoured of melancholy ; some have said of moroseness. The portrait which he has left of himself shows a noble forehead and an intellectual eye. There are few who cannot feel his talents, and all must admire his fortitude. He came coarse and uneducated from the country into the polished circles of London, was caressed, invited, praised and patronized for one little year or so, and then the giddy tide of fashion receded ; but he was not left a wreck ; he had that strength of mind which triumphs over despair. He estimated the patronage of fickle ignorance at what it was worth, and lived to invest his name with a brighter, as well as a steadier halo than that of fashionable wonders.

ADAM CLARKE.

We suppose that no one will deny to Dr. Clarke the claim of great and multifarious learning, and of most patient and unwearied industry in whatever he undertook. The soundness of his judgment, the clearness of his perceptions, and the strength of his reasoning powers are in very high estimation. The truth of some of the religious doctrines which he maintained, may be questioned in many of the divisions of the Christian church ; yet the high characteristics of energy, perseverance, supreme devotion to one great object, all will cheerfully unite in awarding to him.

He was unquestionably the most learned man ever connected with the Methodist church.

Adam Clarke was born at Cootinagtug, about thirty miles from the city of Londonderry, Ireland, in the year 1760. His father was a member of a respectable English family. His mother was of Scottish descent. Reduced fortunes were the reasons of their removing to Ireland. His parents were pious and intelligent people. As soon as he could well be taught anything, he was instructed to fear and love the God and Father of all, and to worship him in spirit and in truth, through the only Mediator.

The religious principles, thus early implanted, expanded and strengthened as he advanced in years. His father being diligently engaged from day to day in his occupation as a farmer, had not perhaps discerned in his son any peculiar predilection for learning. Had this been the case, it is very probable that he would not have cherished it, but that he would have judged it most prudent to turn the attention of his son towards trade and commerce. Though he was able to have imparted to him a sound and mature education, he withheld the boon in a great measure, partly from his circumstances and prospects in life, and partly because he foresaw that his agricultural cares would too frequently engage his time as well as divide the attention of his pupil to too great a degree to anticipate any early proficiency in learning.

Having designed his son for trade, Mr. Clarke placed him under the care of Mr. Bennett, an extensive linen-manufacturer, in the neighbourhood. The lad had either no power or no disposition to throw any

obstacles in the way of a connection which his father evidently desired, and to which, perhaps, he himself thought he should be able to reconcile himself. But whether he betrayed his aversion to manual labour, or whether he discovered his strong desire for study, it was soon perceived that he was very much dissatisfied. Accordingly a separation took place between him and his master, alike honourable to all the parties concerned. His love of reading at the age of nine years, was intense. To gratify this passion, he would undergo any privations, and submit to any hardships. The pence he obtained for good behaviour and extra work, he never expended for toys and sweetmeats, but carefully preserved them for the purchase of books.

Mr. Bennett continued till his death a steady friend and correspondent of Mr. Clarke. About this time, the founder of Methodism, the Rev. John Wesley, was active in his inquiries after pious and promising young men to assist him in the work of the ministry. Adam Clarke was pointed out to him as a youth of promise, by an individual who had become acquainted with his talents. Mr. Wesley had sometime before founded a school at Kingswood, near Bristol, for the education of the sons of preachers. After a short correspondence, young Clarke was sent to this school. Unhappily, the treatment which he received from the master was harsh and violent. Some have supposed it to have arisen out of a determination on the part of the pupil to apply himself to the acquisition of more extensive knowledge than the system or resources of that seminary contemplated. It was during this try-

ing period that he laid the foundation of that profound acquaintance with the Hebrew language, to which he ultimately attained. At an early age he took for his motto, "through desire, a man, having separated himself, seeketh and intermeddleth with all wisdom." Mr. Wesley soon after arrived at Kingswood, and the pains and fears of Mr. Clarke were dispersed. That acute observer perceived and estimated the excellence of his persecuted protege, and in a short time adjudged him to be worthy to undertake the labours of an evangelical itinerancy. Mr. Clarke entered on his public work in 1782. Several circumstances combined to render him a preacher of the highest popularity among the Methodists, and of the greatest usefulness in extending the influence and exalting the character of that denomination.

At the age of twenty-two years, he had upon his hands the study of the Latin, Greek, Hebrew and French languages, but as he was obliged to travel several miles every day, and preached on an average thirty days in every month, he did not make much progress. About this time, he read four volumes of Church History while riding on horseback. Owing to the injudicious conduct of an acquaintance, Dr. Clarke relinquished his studies for the space of four years, but was induced by Mr. John Wesley to resume them. During eleven months, in the year 1784, he preached five hundred and sixty-eight sermons, and travelled many hundreds of miles. This was an average of nearly two sermons every day. He also, during this time, made himself master of the science of chemistry. His attention was first directed to biblical criticism by

the loan, from a friend, of a Hebrew folio Bible, with various readings, which he carefully studied. In 1786, he recommenced the study of the Greek and Latin and the Septuagint version of the Scriptures. He had no teacher, and his stock of books was small, yet he read and collated the original texts in the Polyglot, particularly the Hebrew, Samaritan, Chaldee, Syriac, Vulgate and Septuagint.

Dr. Clarke was an example of temperance and persevering industry. "Rising early, and late taking rest, avoiding all visits of ceremony and journeys of mere pleasure and recreation, restricting himself to the most wholesome diet and temperate beverage, not allowing unnecessary intrusion on his time;—these were among the means by which he at once performed so much important duty, acquired such a store of knowledge, and retained so unusual a portion of sound and vigorous health." Dr. Clarke applied himself to the study of languages for the purpose of assisting the British and Foreign Bible Society.

In the year 1795, he made an entire new translation of the New Testament from the Greek. His principal work is his Commentary on the Old and New Testaments. He commenced this great undertaking at the age of twenty-six, and spent forty years of close and unremitting study upon it. He literally translated every word, comparing the whole with all the *ancient* versions and the most important of the *modern*, and collated all with the various readings of the most eminent biblical scholars, and illustrated the whole by quotations from ancient authors, Rabbinical, Greek, Roman, and Asiatic. In this arduous labour he had no

assistant, nor even a week's help from an amanuensis; on the contrary, he performed during the whole of this period, with the utmost fidelity, the arduous labours of a Methodist preacher. Whatever may be said of its doctrines, its criticisms, and its interpretations, no one can deny that it exhibits an uncommon display of ingenuity and industry, and a vast accumulation of learning.

Dr. Clarke died of the Asiatic cholera, at Bayswater, August 25, 1832. He left his residence the day previous to preach at Bayswater, on the Sabbath. He was attacked in the night, and died at eleven the next day, at the age of seventy-two.

PETER HÖRBERG.

In the life of Benjamin West we have seen the power of genius, directing its possessor, under early adverse circumstances, to a profession to which no external advantages invited him. The life of the Swedish painter, whose name stands at the head of this article, is a still more remarkable example of the successful cultivation of a favourite art, with absolutely no facilities except those created by his own ingenuity. He was impelled, not by patronage or the wishes of friends, but by the taste and force of mind with which nature had endowed him. An ordinary adviser would have assured him, that he was meant for a humble labourer in the lowly sphere of rural life which his father filled; would have predicted for him the toil

and penury of his ancestors; would certainly, whatever dreams of future prosperity he indulged, not have guessed, that without money, without the access to the higher scenes of a city life, which even a peasant may sometimes enjoy, without books, without models, without instruction, he would become one of the most celebrated artists of his country.

PETER HÖRBERG was born in the parish of Virestad, in Småland, Sweden, January 31, 1746. His parents were very poor, and their child so weak and sickly that he could not walk till his third year. His father taught him to read when he was five years old, and before long, by means of a "copy," borrowed from a soldier, gave him some knowledge of writing. At nine years of age he was obliged to go out to service, and received, as compensation for a summer's labour, a pair of mittens and a violin, valued at twenty-four coppers. The violin was a source of much amusement during the winter which he spent at home. He strung it with horse-hair, and made such progress in learning to play, that in the spring his father bought him another instrument with proper strings. For two summers more, he served the peasants as a shepherd-boy, watching the sheep and cattle as they browsed in the wild pastures of the country, according to the Swedish custom. His taste for painting began to manifest itself even as early as this. The Swedish almanacs and catechisms were ornamented with rude engravings; and, as his means would not allow him to own one of these books, he endeavoured from memory to draw the figures on birch bark. He began also to ornament his father's cottage with carvings in soft wood and fir-

bark, among which was an imitation of the altar-piece of the parish church. In the exercise of the same vocation, he carved various figures for cane-heads, at the request of the neighbouring peasants. His chief occupation, however, was in drawing and painting. He soon became dissatisfied with representing the mere figure, and endeavoured to add colour. Having never heard of mixing colours with oil, he discovered for himself a method of using some of the simpler kinds, such as ochre, burnt clay, chalk, and charcoal, in a dry form, as is practised by crayon painters. He used planed boards for canvass; and, if fortune threw in his way a bit of writing paper, "he drew with a pen, using the juice of various berries to colour and shade his drawings." While watching his flocks in the fields, he drew figures upon the smooth rocks, using fir bark for red chalk, and charcoal for black: with a sharp stick also he marked out figures upon the white funguses of the pastures.

Thus he advanced, struggling against poverty, which in his thirteenth year became so pressing, that his father was compelled to enrol him as a reserve recruit in the army, in order to obtain the bounty of a barrel of grain to save the family from starving. Upon this, mingled with chaff and cut straw, they contrived to live through the winter. In 1759, the famine became so severe, that Peter and his sister were sent out as mendicants, and actually begged their bread for a whole year. Early in 1760, Peter determined to apprentice himself to a painter; and, although his parents did not approve the resolution, they finally gave their consent. He accordingly, at the age of fourteen, set

out for Wexiö, distant about thirty-five miles; this being the nearest place at which a master painter could be found. Everything in this market town filled the young peasant with wonder. He was so much abashed as hardly to be able to answer a question. Fortunately for him, on the way from Virestad he had fallen in with a good-natured peasant who conducted him to the painter, whose name was Johan Christian Zschotzscher. This man had already as many apprentices as he needed; but, on allowing Hörberg to give a specimen of his talents with a piece of chalk upon a black board, and afterwards in drawing with colours on the backside of an oak board used to cut tobacco upon, he was so much astonished, especially on learning that he had received no instruction, that he promised to receive him into his service if he could get discharged from his enrolment. His master (that was to be) kept the figure of St. John the Evangelist, which the boy had painted upon the board, but allowed him to take a copy of it to carry home. To procure his discharge, it was necessary for his father to refund the bounty, which was something less than ten shillings of our money. The poverty of the family was such, that two years elapsed before this could be paid. At last, on the 13th of April, 1762, he was received as an apprentice for five years.

Having obtained leave to spend the Christmas holidays with his father, he took his colours with him, and painted "several pieces of a kind of hangings, called *bonad*, which the peasants in many parts of Sweden employ to decorate their apartments at Christmas.

These are of linen, and the paintings are generally scenes from Scripture history, with explanatory inscriptions. For these paintings Peter received about half-a-crown; and this was the first money he earned as a painter." "For half this sum," says he, "my mother bought me tow-cloth for an apron; and, with the remainder, I purchased a lock for a little chest, which my father had made for me the preceding autumn, I had no means of conveying my chest to Wexiö but by drawing it on a little sled, which I did. The contents of the chest were my new apron and a pair of wooden shoes, which my father had also made for me."

He remained at Wexiö until the death of his master, about four years afterwards. The instruction which he received was very meagre; his principal employment was "laying on grounds and grinding colours." He had little time for drawing; and, what was worse than all, his master was incompetent to instruct him. By diligence and fidelity, he, however, so gained the good will of Zschotzscher, that, at his death, he bequeathed him about twelve shillings, on condition of his completing the unfinished work in the shop.

Having received the necessary testimonials from the magistrates at Wexiö, he went to Gottenburg to obtain license as a journeyman painter. His worldly wealth amounted to twenty shillings, and this was soon absorbed by official fees and his other expenses; so that when he started on his homeward journey, a distance of one hundred and ninety miles, he was fully six shillings in debt, and had six coppers in his pocket!

After travelling sixty miles, "he was obliged to sell, at half cost, his 'new red felt hat,' for which he had paid six shillings at Wexiö." After reaching home he immediately began to work, although at disadvantage, until he earned enough to pay his debt at Gottenburg, after which he entered the service of the painter Luthman, at Wexiö.

Within a year from this time, he obtained a license as district painter, which added somewhat to his emoluments, and, what was of more consequence, emancipated him from the control of masters, giving him liberty to follow without restraint the free promptings of his imagination. Before a great while, "concluding," as he says, "that his days would pass more happily in the condition of matrimony," he married a young woman, whose circumstances were quite as humble as his own, and whose mind seems not to have been able to sympathize with that of her husband. So entirely poor were they, that "they had not even a pot, or a wood axe, but managed to make shift by borrowing: however, after they had lived together a year and a half, their prosperity increased to that degree, that they were able to purchase that necessary utensil, an iron pot, and now thought themselves independent." In all this poverty, the gentle and noble character of the man seems never to have given way under accumulated trials. He endured his poverty with firmness, maintained ever a cheerful spirit, and, without murmuring, pursued with earnestness the art which few appreciated, but which was to him so dear.

His establishment, as district painter, did not bring

him an income sufficient for his support. No one in the community about him was competent to judge on his merits, and he found that he must depend on something besides his pencil for a support. "He not only made his own furniture, but made tables, boxes, sledges, and even wooden shoes, for other peasants in the neighbourhood." After a while he took a farm, which he subsequently exchanged for one larger, and again for another still larger, upon which he employed a labourer, who relieved him from the heavier tasks.

He, however, employed his pencil as opportunity offered. In 1783, a clergyman from Kudby, happening to enter his hut, saw some of his productions, and proposed to him to copy "some portraits of the Gustavian royal family." Kudby was about halfway to Stockholm, a city which Hörberg was extremely anxious to visit; and, with the hope of gratifying his wishes in this respect also, he accepted the invitation. His wife and relatives endeavoured to deter him from this expedition; but his mind was fixed, and, in spite of their opposition, he started with about six shillings for his travelling expenses, and two compositions from the life of the Saviour, which he intended to exhibit at Stockholm. On arriving at Kudby, after a journey of four or five days, he found, to his disappointment, that the clergyman had changed his mind; and he received for his pains the liberal reward of a supply of cold provisions! His small stock of money was half exhausted; but he still adhered to his purpose of going to Stockholm, and, after resting a day or two, again started, and, on the tenth day from leaving home, reached that city,

"weary, with blistered feet, his knapsack upon his back, and his roll of pictures under his arm."

After various adventures for a few days, he obtained lodgings with a "drunken countryman from Smäland, named Meierström." He also succeeded in making himself known to Professor Pilo, director of the Swedish Academy of Art, who expressed himself greatly amazed when he saw Hörberg's pictures, and learned how little instruction he had received. He was permitted to draw from the casts of the academy, and made his first attempt from that of the Laocoön. Pilo came to him, after a few hours, praised his drawings, and inquired into his wants and objects. "There is nothing in the world," said he to the Director, "that I desire so much as to remain forsome time at Stockholm; but I see no possibility of remaining here a week, for I have scarcely two shillings;" "for I was ashamed," he says in his biography, "to tell the plain truth, that I had not even a dozen coppers."

In Stockholm, Hörberg remained eight weeks, learning the technicalities of his art, extending his acquaintance, and becoming himself known to his fellow-artists. He had a desire to visit Italy; and Sergell, the first Swedish sculptor of his time, proposed to Gustavus III., the reigning monarch, who was about to visit Rome, to allow Hörberg to accompany him. This request was refused by the king, whose discernment was not sufficient to perceive the real merit that lay concealed under the rude but modest exterior of the peasant. Sergell, however, generously bestowed upon him his salary as professor, during the time he was absent with the king in Italy: it amounted,

however, to less than two pounds, a sum which would seem to indicate the small esteem in which the arts were held, or the extremely few wants or modest pretensions of the first artists of the time. Hörberg was, however, presented to his majesty, whose generosity and condescension went so far, as to bestow upon the poor painter a ticket of admission to a dramatic exhibition. "This," says the painter, "was kind, and the ticket was a more exalted favour than I then understood; but I was so informed, after my return to Stockholm." The presentation had taken place at the palace of Drotthingholm.

After a residence of eight weeks at the capital, where the favours he received, though small, were beyond his expectations, he prepared to return home, having greatly increased his stock of drawings, and with about sixteen shillings in his pocket. "While I reviewed in memory my adventures there," (Stockholm), he says in his autobiography, "my eyes were dimmed with tears of joy, and then I thought upon my home, and my forsaken family, whom I hoped to rejoin in a few days."

He visited the capital again in the following year, and spent several months drawing in the academy, and "executing pictures from his own designs." One of these, representing Zaleucus submitting to the loss of an eye to save one of the eyes of his son, was exhibited at the academy, and was afterwards bought by the brother of the king for twenty shillings. The academy also awarded him the third silver medal for drawing from the living model." He now became more known, and his professional engagements proportionally in-

creased. He was free from debt, although still comparatively poor.

In 1787, he again went to Stockholm, and remained from January to September. During this time he received from the academy their second silver medal, and became a candidate for the large gold medal. This he did not obtain, although several of the members, and among them his friend Sergell, thought he deserved it. The picture which he painted on this occasion was sold for four pounds, a larger sum than he had thus far received for any of his works.

At the invitation of Baron de Geer, the Royal Chamberlain, Hörberg, after returning from Stockholm, from this which proved to be his last visit, went to Finispäng. This residence of the Baron was a great resort of artists, who enjoyed without restraint the liberal hospitality of their host. For several years, Hörberg spent much time there, and executed some of his best works. The elegant society which he there enjoyed, was very grateful to his tastes, and contributed, even at that comparatively late period of his life, to his refinement and intellectual cultivation. By the advice of the Baron, he removed from Smäland to Ostergöthland, a distance of nearly two hundred miles from his early home at Virestad, and bought a small farm for about forty pounds His circumstances remained very humble. "He speaks with profound thankfulness of a present which he received from the Countess Aurora de Geer, consisting of two kettles, a frying pan, six pewter plates, a few earthen pots, a yoke of oxen, a milch cow, and four sheep." "Hörberg's countryman, the poet Atter-

hom, observes, 'that this was rather aiding his wife, than benefiting him.'" He was enabled, however, to live in frugal independence, and in the constant exercise of his art. To be sure, he received less than he might have obtained in the exercise of any of the common mechanic trades; but such was his attachment to his art, that he never used it as a simple method of getting money. It was to him in itself an object far higher and better than wealth. He painted much for persons in his own condition, who were proud that a poor peasant could rise to so much distinction as an artist. There was, too, in his works a native grandeur, which even the uninstructed of his countrymen could understand.

In the year 1800, he made his last journey to his native parish of Virestad, and painted an altar-piece for the parish church. His fortune increased enough, some time before his death, to enable him to purchase another small farm; so that, in the latter part of his life, he gave to each of his sons a small parcel of land, reserving only an annual rent for his own support. He received also, in 1812, a pension of about eight pounds from the then reigning monarch of Sweden. It is to be regretted that the last years of his life, although in the main placid and beautiful, were somewhat disturbed by the unsympathizing complaints of some of his family, who, unable to appreciate the high objects of his art, did not withhold their reproaches when he could no longer command his usual income. He was thus driven to pass much of his time in solitude, for the better enjoyment of which he had built for himself a studio, on a rocky eminence, near his dwelling,

where he worked, or, when not at work, would walk backwards and forwards by the hour together. Towards the last, his physical powers gradually failed, till, on the 24th of January, 1816, he quietly departed this life, at the age of 70 years.

Notwithstanding the unfavourable circumstances in which he was placed, his diligence enabled him to produce a vast number of works. His largest works were his altar-pieces; and, of these, one was thirty feet long by twenty high. Of these he painted eighty-seven. Between 1764 and 1807, he produced, besides altar-pieces, five hundred and twenty paintings. Of his works after this latter date, no list is preserved; but the number must have been considerable. The number of his drawings was much greater than that of his paintings. He mentions himself,—" 1. The history of Jesus Christ, in a volume consisting of two hundred and ninety-one designs. 2. A collection of several thousand drawings from gems and other antiques. 3. Till Eulenspiegel's history of Christ, for Baron de Geer. 4. Traditions concerning Jesus of Nazareth, or the fabulous history of Christ, three hundred and forty-seven designs, of the size of playing-cards." His mechanical ingenuity was also very great, and led him occasionally to pursuits somewhat diverse from painting. " With few and simple implements, he executed the most ingenious works, and with a common knife he carved in wood various objects of sculpture, by no means destitute of artistical merit. He not only carved statues in wood, but modelled them in clay, and then burnt them in a brick-kiln. Besides cabinet work, he occupied himself occa-

sionally for many years in making violins; and as he felt an irresistible impulse to investigate the movements of the heavenly bodies, and acquire some knowledge of astronomy, he made instruments of wood for his observations, and omitted no opportunity to extend his astronomical knowledge, by conversation or study of such works on that science as fell in his way."

Thus was he ever grasping for knowledge; and what he learned, he in some sort systematized, so that his mind was not a repository of barren facts, but became, by his attainments, harmoniously developed. He was a great lover of music, and composed some pieces said to be characterized by originality and deep feeling. He was fond of poetry, and tried his hand at composition. He left in manuscript "various literary sketches and collections." One volume, consisting of extracts, "upon the early history and mythology of the northern kingdoms," "contains many drawings and observations upon the manner in which the modern artists ought to treat subjects drawn from the mythology and mythical history of the North." His most interesting literary work is his autobiography, composed in a style so open, so simple and unaffected, as to make it extremely interesting, and of much value as a contribution to Swedish literature. He speaks without reserve, and yet with delicacy, of his poverty and trials, makes no boast of his fortitude, and exhibits no discontent or fretfulness; but everywhere, by a manly and cheerful temper, shows how thoroughly he appreciates the true and highest purposes of art, and with how few external advantages he is contented to live, provided the aspirations of his spirit are satis-

fied. He did not endeavour to rise above the social rank in which he was born, and educated his sons with reference to their condition, as peasants. His honour he derived not from station, but from character.

His person corresponded to his traits of character. "He was strongly built," says the poet Atterbom, "rather low of stature, of a firm and manly carriage, unconstrained and dignified in manner, with a lofty forehead, a clear and gentle eye, a mouth delicately but firmly chiselled, flowing silver locks beneath his velvet cap, and neatly but simply clad in the style of the better class of peasants. It was thus that I saw him in the summer of 1809, when I came to Fälla, arly one Sunday morning, with my brother-in-law, who was to preach to a congregation of miners in the open air. Hörberg came a considerable distance on foot to meet my brother-in-law, of whose society he was fond. We sent our carriage before us, and walked with Hörberg, by a romantic forest-path, to the city; the heavens were blue and warm, the birds were caroling, and the old painter was as joyous as they." He had true ideas of his art. Of the painters at Stockholm, he said on one occasion (though without the least spirit of detraction), "There were many who painted better, much better than he; but *they had no ideas, no grand conceptions.*"

As an artist, Hörberg attempted great things; and if he did not place himself side by side with the immortal painters of Italy, it was not so much because he lacked the genius, as because he had not the cultivation which they were blessed with. "He became,"

says the Swedish poet from whom we have already quoted, "but a fragment of what he might have been, a melancholy but splendid ruin of a structure, which nature had designed to rear in the grandest proportions." Imperfect, indeed, in some branches of his beautiful art, his genius was so true, so grand, so poetic and elevated, his invention so rich, his conception so original, and his life so humble and pure, that the name of the peasant-painter may well be mentioned as among those most worthy of a grateful remembrance in the later annals of Sweden.

ALEXANDER MURRAY.

ALEXANDER MURRAY was born in the parish of Minnigaff, in Kircudbrightshire, on the twenty-second of October, 1775. His father was, at this time, nearly seventy years of age, and had been a shepherd all his life, as his own father, and probably his ancestors for many generations had been.

Alexander received his first lessons in reading, from his father. "The old man," he tells us, "bought him a catechism, (which, in Scotland, is generally printed with a copy of the alphabet in large type prefixed;) but as it was too good a book for me to handle at all times, it was generally locked up, and my father, throughout the winter, drew the figures of the letters to me, in his *written* hand, on the board of an *old wool card*, with the black end of an extinguished heather

stem or root snatched from the fire. I soon learned all the alphabet in this form, and became writer as well as reader. I wrought with the board and brand continually."

His father's whole property consisted only of two or three scores of sheep and four muirland cows. "He had no debts and no money." As all his other sons were shepherds, it was with him a matter of course that Alexander should be brought up the same way; and accordingly, as soon as he had strength for anything, that is, when he was about seven or eight years of age, he was sent to the hills with the sheep. He however gave no promise of being a good shepherd, and he was often blamed by his father as lazy and useless. He was not stout, and he was near-sighted, which his father did not know. "Besides," says he, "I was sedentary, indolent, and given to books and writing on boards with coals." But his father was too poor to send him to school, his attendance upon which, indeed, was scarcely practicable, unless he boarded in the village, from which their cottage was five or six miles distant. About this time a brother of his mother's, who had made a little money, came to pay them a visit; and hearing such accounts of the genius of his nephew, whose fame was now the discourse of the whole glen, offered to be at the expense of boarding him for a short time in New Galloway, and keeping him at school there. As he tells us himself, he made at first a somewhat awkward figure on this new scene. "My pronunciation was laughed at, and my whole speech was a subject of fun. But I soon gained impudence; and before vacation in August, I often

stood *dux* of the Bible class. I was in the mean time taught to write copies, and use paper and ink. But I both wrote and printed, that is, imitated printed letters, when out of school."

His attendance at school, however, had scarcely lasted for three months, when he fell into bad health, and was obliged to return home. For nearly five years after this, he was left again to be his own instructor, with no assistance whatever from any one. He soon recovered his health, but during the long period we have mentioned, he looked in vain for the means of again pursuing his studies under the advantages which he had for a short time enjoyed. As soon as he became sufficiently well, he was put to his old employment of assisting the rest of the family as a shepherd-boy. "I was still," says he, "attached to reading, printing of words, and getting by heart ballads, of which I procured several.

When he was about twelve years of age, as there seemed to be no likelihood that he would ever be able to gain his bread as a shepherd, his parents were probably anxious that he should attempt something in another way to help to maintain himself.

Accordingly, in the latter part of the year 1787, he engaged as teacher in the families of two of the neighbouring farmers; for his services in which capacity, throughout the winter, he was remunerated with the sum of sixteen shillings! He had probably, however, his board free in addition to his salary, of which he immediately laid out a part in the purchase of books.

In 1790, he again attended school, during the sum-

mer, for about three months and a half. It seems to have been about this time that his taste for learning foreign languages first began to develope itself, having been excited by the study of Salmon's Geography.

There was at that time in the school a class of four boys, advanced as far as the pronouns in Latin Grammar. He was allowed to attend while the teacher was instructing them. "I was permitted," says he, "to get a long lesson as I liked, and was never fettered by being made to join the class. The boys ridiculed my separated condition; but before the vacation, in August, I had reached the end of the Rudiments, knew a good deal more than they, by reading, at home, the notes on the foot of each page; and was so greatly improved in French, that I could read almost any French book at opening of it. I compared French and Latin, and riveted the words of both in my memory by this practice."

All this was the work of about two months and a-half before the vacation, and a fortnight after it. During the winter, he employed every spare moment in pondering upon some Latin books. "About this time, too," says he, "I got another book, which has, ever since, influenced and inflamed my imagination. This was Paradise Lost, of which I had heard, and which I was eager to see. I cannot describe the ardour, or various feelings, with which I read, studied and admired this first-rate work. I found it as difficult to understand as Latin, and soon saw that it required to be parsed, like that language. I account my first acquaintance with Paradise Lost an era in my reading." The next summer was spent still more laboriously

than the preceding. He again attended school, where he found a class reading Ovid, Cæsar, and Virgil. "I laughed," says he, "at the difficulty with which they prepared their lessons; and often obliged them by reading them over, to assist the work of preparation." He employed his time at home in almost incessant study. Having introduced himself to Mr. Maitland, the clergyman of the parish, by writing letters to him in Latin and Greek, he obtained from that gentleman a number of classical books, which he read with great diligence. He was soon so privileged as to obtain a copy of a Hebrew Grammar and of the Hebrew Bible. "I made good use," says he, "of this loan; I read the Bible throughout, and many passages and books of it a number of times." It would appear that he had actually made himself familiar, and that chiefly by his own unassisted exertions, with the French, Latin, Greek, and Hebrew languages, and perused several of the principal authors in all of them, within about a year and a-half from the time when they were all entirely unknown to him. There is not perhaps, on record, a more extraordinary instance of youthful ardour and perseverance. It may serve to show what is possible to be accomplished.

He was again engaged in teaching during the winter, and received for his labour, as he states, about thirty-five or forty shillings. Every spare hour was devoted to the study of Latin, Greek, Hebrew, and French. In the summer of 1792 he returned to school for the last time. The different periods of his school attendance, added together, make about thirteen months, scattered over the space of nearly eight

years. Having obtained a copy of Bailey's Dictionary, he found in it the Anglo-Saxon alphabet, and many words in the same dialect. This was his introduction to the study of the northern languages. He also made himself acquainted with many Welsh phrases, from a small religious treatise in the language, without any dictionary or grammar. This was done by minute observation and comparison of words, terminations and phrases. He also made himself acquainted with the Arabic and Abyssinian alphabets. Murray was now in his nineteenth year.

It so happened, that there was in the neighbourhood an itinerant tea-merchant, by the name of M'Harg, who knew him well, and had formed so high an idea of his genius and learning, that he was in the habit of sounding his fame wherever he went. Among others to whom he spoke of him, was Mr. James Kinnear, of Edinburgh, then a journeyman printer in the king's printing-office. Mr. Kinnear, with a zeal which does him great credit, immediately suggested that Murray should transmit an account of himself, and some evidence of his attainments, to Edinburgh, which he undertook to lay before some of the literary men of that city. This plan was adopted. Murray was examined by the principal and several of the professors. He so surprised them by the extent and accuracy of his acquaintance with the languages, that measures for his admission to the university, and his maintenance, were immediately taken. These arrangements were principally effected by the exertions of Principal Baird. His ardent and most efficient patronage of one, thus recommended to him only by his deserts and

his need of patronage, entitles him to the lasting gratitude of all the friends of learning. Murray was, indeed, soon able to support himself. All his difficulties may be said to have been over as soon as he found his way to the university.

For the next ten or twelve years of his life, he resided principally at Edinburgh. No man that ever lived, probably, not excepting Sir William Jones himself, has prosecuted the study of languages to such an extent as Murray. By the end of his short life scarcely one of the oriental or northern tongues remained uninvestigated by him, so far as any sources for acquiring a knowledge of them were accessible. Of the six or seven dialects of the Abyssinian or Ethiopic language in particular, he made himself much more completely master than any European had been before. This led to his being selected by the booksellers, in 1802, to prepare an edition of Bruce's Travels, which appeared in 1805, in seven volumes octavo, and at once placed him in the first rank of the oriental scholars of the age. In 1806, he left Edinburgh, in order to officiate as clergyman in the parish of Urr, in Dumfries-shire. All his leisure moments were devoted to the composition of his stupendous work on the languages of Europe.

In 1812, the professorship of oriental languages in the university of Edinburgh became vacant. Mr. Murray's friends immediately seized the opportunity of endeavouring to obtain for him the situation, of all others, which he seemed destined to fill. The contest was, eventually, carried on between Murray and a single opponent. The result was very doubtful, as the

election depended on the Town-Council, a corporate body of thirty-three individuals. Extraordinary exertions were made by the friends of both candidates. Mr. Salt, the distinguished orientalist, stated that Mr. Murray was the only man in the British dominions, in his opinion, capable of translating an Ethiopic letter which he had brought into the country. Among those who exerted themselves in his behalf, were Dr. James Gregory, Professors Leslie, Playfair, Dugald Stewart, Mr. Jeffrey, Sir Walter Scott, &c. Well was Mr. Murray entitled to say, before he learned the result of the election, "If the efforts of my friends have been exerted for an unsuccessful candidate, they will not be forgotten, *for we have perished in light.*" He was elected by a majority of two votes. On the thirty-first of October, Mr. Murray entered on the discharge of his duties, though, alas, near the grave. His excessive labours had prostrated his strength. On the thirteenth of April he retired to the bed from which he never rose; before the close of another day he was among the dead. He was in the thirty-eighth year of his age.

His History of European Languages, though left by him in a very imperfect state, is still a splendid monument of his ingenuity and erudition.

THE END.

EDINBURGH: PRINTED BY T. NELSON AND SONS.